

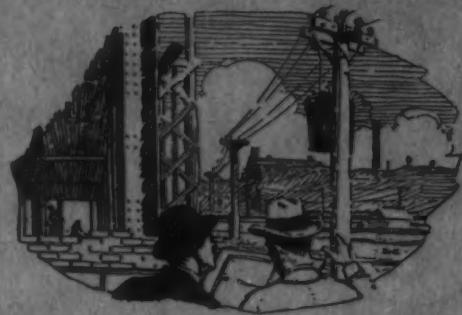
JUN 16 1921

THE
ARCHITECTURAL
FORUM



MAY
1921

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THE EDITOR'S FORUM

A STEP NECESSARY TO HASTEN BUILDING CONSTRUCTION

A GROUP of producers, representing all of the larger building materials manufacturers' associations, has recently carried to President Harding its demand for prompt action against high freight rates which are now impeding building construction generally. The President is said to have approved this important step, and it is believed that in this way the freight rate problem may be brought to an immediate solution, thus greatly assisting in hastening construction work throughout the country, through concessions which may be made by freight carriers and by the materials producers in order to stimulate immediate buying.

The producers of building materials contend, properly, that freight rates are holding up building, in spite of the fact that there is a known demand for at least 1,000,000 dwellings and for many types of larger structures, together with an extensive road building program.

In recent conferences held in Washington with Chairman Winslow of the House Interstate Commerce Committee, and with Chairman Clark of the Interstate Commerce Commission, this joint conference was suggested. We understand that at that time Mr. Clark asked if the producers were willing to cut prices for 90 days to get building going. The reply was that such a step could be seriously considered, provided the railroads would cut rates on the hauling of such materials.

The material manufacturers in presenting the case to President Harding have demonstrated that the chief cause of delay in building work is in the charging of excessive freight rates, particularly those applying on materials which are heavy and of low value. Freight rates on building and road materials have been increased on an average of 110 per cent since 1917, as compared with 75 per cent on other forms of merchandise which are general commodities. Some instances have been shown where the rates on building and road making materials are now in excess of their prices at the points of production. It is evident that rates have been advanced far beyond the figures which this traffic can possibly bear.

The determined stand which manufacturing associations are taking in this matter, together with their apparent willingness to consider a sacrifice of immediate profits for the period necessary to get building under way, is to be highly commended. The idea of sacrificing something in the way of profit for the time being, in order to cut the cost of building, is one which should appeal in a practical manner to all branches of the building industry.

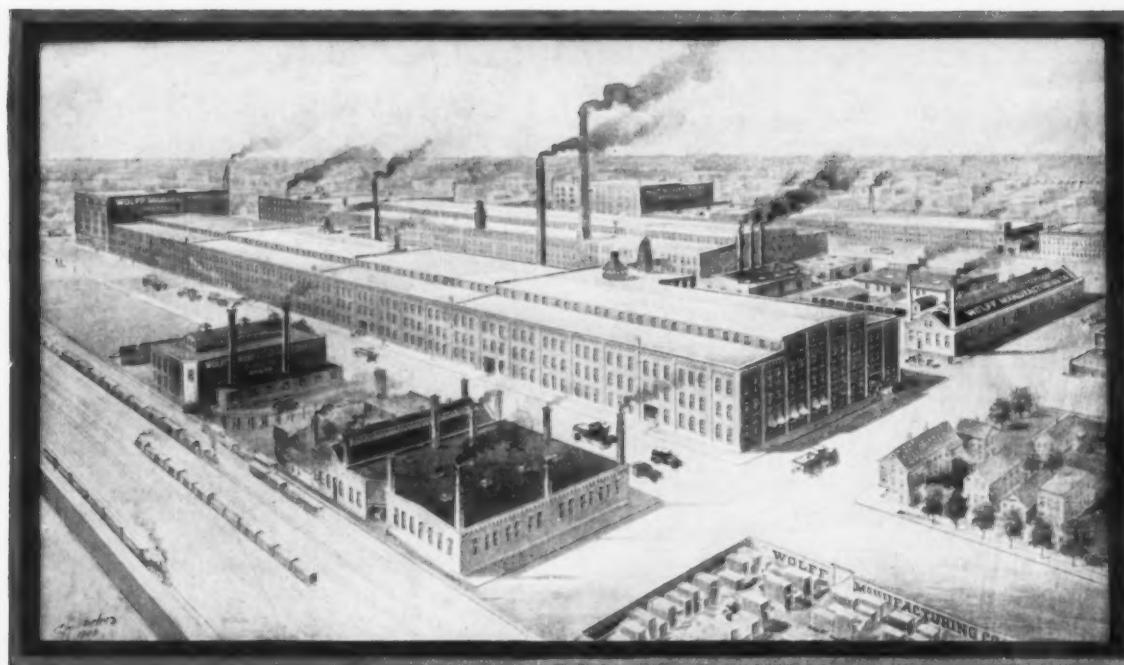
The time of retrenchment is here. It is a period

when everyone is called upon to sacrifice in some measure for the benefit of the public and the industry, or a dull period will set in which must result in inactivity and dull conditions which will frustrate every effort to stimulate the necessary activity in the building field. It is not a question of who will give in first, or whether any branch of the building industry shall or shall not give in. Ultimately, the pressure of economic conditions will force such action. Is it not better, therefore, that all interested parties should meet the situation half way and benefit by cumulative momentum, which would thus be provided, than to be forced to endure a similar situation over a long period?

There is just one basic method of stimulating building today, and that is for every interested individual and organization to shake off the inertia of this dull period, which is only a lull before a storm of building activity. Hard work and low profits should be the slogan throughout the building field. It is better to be active, with little or even no profit, than to keep on deluding ourselves with the idea that the so-called buyers' strike will end, and that the force of demand will hasten a volume of construction, regardless of the attitude of those whose services are called upon to meet this demand. Today there is not such a prohibitive difference between the actual costs of building and the figures at which the public is willing to build that it cannot be largely eliminated by cutting profits for the time being, and by really going to work. Notwithstanding loud paper protest, organized labor in the building field is realizing this fact. In spite of paper statements, we know that some architects are realizing this condition also, and are doing their part to encourage immediate building. If each branch of the building industry will do its part, we may expect the beginning of sound activity in the early fall of 1921.

DEPARTMENT OF COMMERCE TO STUDY BUILDING INDUSTRY

SECRETARY of Commerce Hoover announced in his address at the A. I. A. convention in Washington the appointment of seven architects and engineers, to advise with him on the national housing problem and related subjects pertaining to building. The members of the Committee are Ira H. Woolson, consulting engineer of the National Board of Fire Underwriters; Rudolph P. Miller, Superintendent of Buildings of Manhattan; J. R. Worcester, consulting engineer, Boston; Prof. W. K. Hatt, of Purdue University; J. A. Newlin, of the Forest Products Laboratory; Ernest J. Russell, architect, St. Louis, and Edwin H. Brown, architect, Minneapolis. The study of building codes, with the purpose of suggesting minimum standards, will be one important detail of their work.



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THE CASINO, VILLA BERCHEZ
ON THE TERRAGLIO, NEAR MESTRE, ITALY

"Villas of the Veneto"

The **ARCHITECTURAL FORUM**

VOLUME XXXIV

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NUMBER 5

The American Institute of Architects' Convention

WASHINGTON, D. C., MAY 11, 12 and 13

THE commercial and business structure of our country is in the midst of great economic difficulties. It is but natural that these difficulties should be reflected in the practice of architecture, which is dependent in an almost complete measure upon business prosperity. Dissatisfaction with present conditions is to be expected, and much straining and pulling are evident in an attempt to give artificial impetus to the process of settlement, which can only work out gradually in accordance with economic laws. The result is a confusion of ideas, a tendency to follow bypaths that offer tempting prospects; a questioning of the soundness of principles previously accepted as fundamental; all ending in obscuring the main goal—which must be kept in clearer sight today than ever before.

Such is the condition in a great majority of human activities; such is the condition within the architectural profession as it was represented by more than 200 delegates at the national convention of the American Institute of Architects.

What is the work of the architectural profession? What are its obligations to client, public and self? What is its goal, and how is it to be gained? What is the Institute? What are its duties to the public and the architect? These questions and many others are suggested by the proceedings of the convention. They remain undetermined, and there are as many opinions expressed and inferred as there are answers.

The convention consumed the time allotted to it; the delegates gave varying degrees of attention; those with special suggestions and recommendations from their local chapters presented them; they were considered in correct parliamentary form, but what does an analysis of the work accomplished show? Have architects, the country over, a clearer idea of their professional duty? Have they been given the feeling of renewed confidence and courage to attack their problems in a vigorous, straightforward way? The answer must be no. The opportunity to make this possible was present; delegates from every section of the country were in attendance, fresh from actual contact with today's conflicting conditions; but the will, ma-

chinery or whatever is necessary to bring constructive ideas from such an assembly, was lacking.

Why does such a condition exist? There is one outstanding reason—conservatism of the most deadening variety. The world is entering a period probably greater in potential influence than any previously recorded in history. It is to be a period of great economic development, in which material resources, executive and keen professional ability will be highly important factors. Will conservatism supply the energy and power to cope with forces of this character? Conservatism is satisfaction with conditions as they are; it provides a comfortable prop in the way of precedent on which to lean when conditions requiring a decision arise. It is a safe and comfortable path to follow in normal times, but it is difficult to associate it with progress, and progress is the keynote today. Conservatism will not furnish the answer to questions arising now, nor those that will arise in the next decade. The professional body, business association or individual lacking the courage to solve today's problems in the light of today's conditions, will fail.

Individual architects, to a large number, can be named who are meeting present problems in a manner that commands the utmost respect and admiration. But must the Institute lag behind in the path blazed by the individual practitioner? The Institute should represent the collective ideas of the progressive leaders in the profession; it should not be relegated to a position of following on the heels of progress. It should and must lead! Otherwise the burden of doing the work for which the Institute is organized falls on the individual or small group of constructive thinkers. The individual can and will assume the burden; he will make his own decisions that seem best in the light of local conditions. But is this policy going to strengthen the Institute? The great mass of architects look to the Institute as their guide—their inspiration. If the Institute has not the courage to fill this role, its usefulness as an aid to the practicing architect is greatly impaired.

Of what particular interest, therefore, is a chronological review of the convention proceedings?

There is little to record that may be described as actual progress; a resume of almost any previous convention would serve nearly as well. The ancient topics of competitions, architectural education and improvement of public taste were given their usual prominence; similar proposals were made and similar resolutions passed as in previous years. On the other hand, topics of vital, current interest are limited in debate, and in the end generally referred to the Board of Directors, which always genially accepts, for consideration or burial, any proposals too weighty for the delegates to discuss to a conclusion.

We will take this occasion to point out a few of the opportunities the Institute should seize to build up a professional society with which it will be necessary and desirable for every capable architect to associate himself. It is not our purpose to indulge in captious criticism, rather is it to exercise our editorial function—to hold the mirror, as it were, so that some observations may be expressed that, in the nature of things, are not so easily evident to those within the organization.

We have said that the proceedings of the convention suggest the question, "What is the Institute"? The founders of the Institute organized themselves to uphold and improve the standard of architecture as a fine art, and to aid themselves and other architects in developing a professional pursuit on a high ethical plane with intelligent and capable service to the public.

If any one characteristic of the convention were to be singled out as indicating the trend of thought today it would be the desire for power and the recognition of its possession, on the part of the public. This in itself is not to be criticised in an organization where power is used in furthering public service, but the Institute appears somewhat impatient over the comparatively slow process by which public recognition is acquired, and there are consequently definite tendencies of a desire to force more speedy recognition. This is, we think, frankly a mistake. Recognition will come in full measure to any individual or group that makes a sincere effort to deserve it, and any attempts to secure it otherwise are likely to result in retarding the movement.

We fear that some of the fundamental purposes for which the Institute was organized are being lost sight of, due undoubtedly to the disturbed economic conditions under which we labor today. Thus the Institute in some of its own activities, and in its endorsement of other activities inaugurated by groups of its members, is becoming involved in ventures which are purely of a business nature. Business ventures may, of course, be perfectly honorable and legitimate, but in the very nature of things they entail the adoption of policies which cannot always be found compatible with the basic reasons underlying the existence of a professional body founded for the improvement of its members and the upbuilding of an art.

We refer particularly to the recent organization to provide plans for small houses to people throughout the country, who, statistics seem to prove, know little of the architect's work and seldom if ever employ him in solving their modest problems. For the past few years this problem has been bothering certain men in the profession, perhaps stimulated into crystallization by the experience of many in war housing. There is a definite phase of public service to the proposal that is most worthy of support, but we feel that in response to this urge a somewhat ill-considered program has been definitely adopted. In short, the public service angle has been merged with a plan which is purely business—with stockholders, subsidiary corporations, regional directors, a parent corporation and all the paraphernalia that goes along with the modern idea of "big business"—the whole given an excellent assurance of business success by the endorsement of the American Institute of Architects. The plan, carried to a logical and possible conclusion, means the control of a very large part of the small and moderate cost work of the country by a large national corporation, allocating work to some nine regional subsidiary corporations. The source of any art thus produced will be the corporation, the individual designers who conceive the plans being recognized only in the published lists of stockholding members.

Wholly aside from the theoretical propriety of the Institute embracing activities of a business nature, is the larger aspect—the reaction on the profession at large, and the effect on the Institute in its function of developing the smaller practitioner to a point of high standards in both art and service.

We have, therefore, immediately a reversal of policy. Architecture has always been considered a personal art; it emanates from a designer who must be an individual and should be an artist. Small house architecture is, however, evidently an exception—it can be produced by a corporation, and it is claimed that the man who secures his modest architectural service through the corporation will gain a clear idea of the *architect's* function, and that when he prospers and has need for a larger home or a new business building, he will consult an individual practicing architect and employ him on regularly accepted professional terms!

The psychology does not seem quite clear. He will more probably consult the architectural corporation, and if it is not in a position to render him service he will be inclined to question the discrimination. He has been educated to stock architectural service, over the counter, and will search out some other corporation or service that has no limitations.

The housing bureaus are definitely in the "stock plan business." They undoubtedly will provide more complete service, and probably a better grade of design than existing agencies, but the success of the movement depends entirely on business considerations—involving extensive publicity. This



The less familiar view of "bowling green," gardens and buildings seen on looking toward the river



AIRPLANE VIEWS OF "MOUNT VERNON," NEAR WASHINGTON, D. C.

Few large estates of present-day development possess the informal symmetry and colorful patterns of terrain that George Washington's home on the Potomac spreads before the aviator. Notably beautiful on the ground, it could hardly have been more pleasing if anticipating the view from the air.

Photographs by courtesy of the U. S. Army Air Service

will be possible only by the aid of large capital, which obviously the return from sales of plans will not provide. Arrangements with building material manufacturers, who have large distributing channels, therefore become necessary. They will be actuated by either the aid the plans will afford them in merchandising their products or the possible direct return from sales of the plans themselves. The architects making up the personnel of the various bureaus, and incidentally the Institute through its endorsement, thus become definitely allied with a commercial enterprise which is a departure from purely professional grounds.

Another phase which is of concern to the Institute, is the reaction upon it of large numbers of young men in the profession who are dependent for the start of professional careers on just such work as these corporations will take care of. These young men, on the whole, are doing creditable work. Each in his small sphere of influence is spreading the gospel of better architecture and, furthermore, he is creating a visible expression of the real service of the architect—the work of an individual designer who is able to interpret the owner's needs into actual building form with some degree of taste. While it is correctly contended that this plan service will reach people who, because of remote locations, could not possibly be served by architects, there is no means of confining the service to them and the plans will, in perhaps larger degree, be used in the suburbs of cities where innumerable young men are available for architectural service. To develop an architectural practice is not an easy problem, and for many it will not be made easier by a network of architectural corporations covering the country that propose to supply "complete architectural service" at a price with which the individual architect cannot possibly compete.

We do not wish to underestimate the public service which is the underlying principle of this plan, but there are numberless ways in which this angle could be approached whereby those now not served by the profession could be given advice and plans at low cost and the field which is now being well served by the young architect would not be jeopardized. The young man working earnestly today is future timber for the architectural profession and the Institute, and he should be accorded every recognition and help; certainly no step should be taken by the national organization that might frustrate his efforts. The position of architecture in small work is not fundamentally bad; recent years have seen a tremendous advance in the standards of taste of the small home builder, for which the enthusiasm of individual architects and the live influence of their work have been responsible. This will steadily grow, and it is safe to say that it will eventually build up a more truthful and vigorous expression of America's taste in home building than artificial and hurried methods employed in corporate effort could ever do.

One feature which was a departure from late convention precedent requires comment. This was the provision of a place in the program for the discussion of subjects pertaining to design, and judging from the very full attendance these meetings enjoyed, in contrast to those dealing with routine matters, it would be distinctly worth while to continue them in future conventions. An opportunity was available, at the end of the lectures, for general discussion which was widely participated in and brought out points of decided interest and value. Harvey W. Corbett, of Helmle & Corbett, lectured upon the subject, "Planning High Buildings for Narrow Streets," and illustrated his talk with interesting slides of the newer tall buildings in New York designed in accordance with the regulations of the Zoning Law, which have been instrumental in changing completely the principles of design of office and other high buildings. The law, while not perfect, is at least working to the advantage of architecture, because it has forced the consideration of the tall building in three dimensions instead of the two dimensions of a street facade, and as a result some very interesting solutions of the tall building problem may be expected in New York.

Other illustrated talks were by George S. Howe on "The Minor Architecture of France," and by Charles Z. Klauder on "Recent American Collegiate Architecture," which afforded very convincing evidence of the high standard of design that has come to characterize American colleges. These talks injected an element of inspiration that was not lost on the delegates. They were particularly of interest to architects from parts of the country where large opportunities for architecture have not yet been developed; through their membership in the Institute these men could feel a definite contact with the larger work and carry away with them a determination to take the greatest advantage of the opportunities that are afforded them.

This should be the keynote of all convention work. The Institute must provide the inspiration that will prompt the individual to make his service better from the angles of both design and business service. Opportunity should be given for the discussion of problems as they arise in practice, and action looking to the formation of policies should be taken at times when such action will be of most benefit. There is too evident a reluctance to deal with questions that require decisions; action is apt to be postponed to a time when conditions may be quite different and the decision of little value. The Institute must come to the realization that in its hands is placed the welfare of the architectural profession. It should adopt a progressive, alert policy that will establish it definitely as the leader of the profession. This accomplished, its membership will grow; the satisfactory increase of 700 members this year will be repeated again and again with little effort; its influence will extend to every section of the country, and the power and recognition it desires will be forthcoming in full measure.

Villas of the Veneto

III. THE VILLA BERCHET, ON THE TERRAGLIO, NEAR MESTRE

By HAROLD DONALDSON EBERLEIN AND ROBERT B. C. M. CARRÈRE

THE whole of the Veneto, so far as villas are concerned, is a thoroughly Palladianized country. Probably nowhere else, either within or outside of Italy, can a region be found in which the dominating influence of one man is more clearly to be traced in all the manifestations of rural domestic architecture.

It should not be inferred from this statement that all the country houses that may lay claim to any degree of architectural merit were designed either by Palladio or by those of his contemporaries or successors who closely followed his manner or precepts. But Palladio supplied the initial impetus, under divers phases of which villas continued generally to be built for two centuries afterwards and, indeed, to some extent, down to the present day. Not a few of them show sadly feeble and meager use of Palladian principles, it is true, but notwithstanding their manifest shortcomings one who is willing to analyze their compositions may discern back of it all a Palladian concept.

In other words, Palladio created the background, and upon this background his successors have wrought, sometimes well and sometimes unsuccessfully, according to their lights or according to the trend of current fashions. The architects of the baroque age, with characteristic assurance, did whatsoever they listed, and they embodied features of composition and methods of detail that would have driven Palladio, with his regard for archaeological rectitude, to rage or despair.

But notwithstanding the florid creations of the baroque architects and the elaborations of Count Fregimelica, or those of his less gifted and less known contemporaries, it is evident that one and all followed along a well beaten path of which the course had been determined by the original Palladian trail. It matters not whether for examples we turn to the lordly palace of the Pisani, at Stra, or to the lesser villas, shooting boxes, and farm-houses along the Canale di Brenta; whether we pursue our course along the Terraglio towards

Treviso, or whether we search the country in the directions of Castelfranco or Vicenza; whether we scan structures that command admiration for their excellence, or whether we contemplate architectural trivialities that disclose Palladianism run to seed, more and more does the conviction force itself upon the mind that Andrea Palladio laid the broad foundations of a generic style, which those who came after him have modified in varying degrees but have never wholly obliterated. Consequently, the inter-relationship of rural architecture in the Veneto is just as distinctly and locally characteristic of the region, and just as unmistakable, as is the clearly marked local relationship between the villas of Tuscany.

To understand how it was thus given to Palladio to lay in the Veneto a comprehensive foundation for rural architecture, a foundation that served to influence profoundly its whole subsequent development; how it was that he was privileged to chart, as it were, upon a clean sheet, a course that his successors found it expedient, in the main, to follow, we must bear in mind two controlling considera-

tions. In the first place, the condition of the mainland in the Veneto, prior to the sixteenth century, had not been such as to invite the establishment of villas. Turmoil had prevailed almost without cessation, and the territory had been sadly harassed through the pillage and destruction attendant upon the strife of warring factions. Many of the holdings of great monastic houses, in the possession or under the feudal protection of which much of the land was formerly held, had been laid in ruins, and for hundreds of years afterwards, when fields were ploughed or foundations being dug, it was no uncommon thing to uncover bits of mediaeval sculpture that had once graced buildings thrown down in the ages of violence. Thus the field was ready for the creation of an entirely fresh villa tradition. In the second place, with the coming of more settled conditions across the lagoons, and with the development of that wonderful system of canals that reclaimed large areas of fen



Andrea Palladio, 1508-1580

country, the Venetians turned their thoughts thitherward and entered upon that course of building which was to bring forth some of the stateliest villas in all the north of Italy. To this experiment in the establishment of villas they were impelled not only by the invitation of a now secure and peaceful countryside, but also by a freshly awakened passion for the enjoyment of nature's charms, an impulse traceable to the all-pervading influence of humanism. The same influence led them to plant goodly groves and gardens where, in a congenial and appropriate setting, they might re-enact the polite and intellectual refinements of the Greek Academy.

In their enthusiasm for the "new learning," and prompted to imitate with a sort of amiable and harmless pedantry the manners of the ancients, the physical realization of their ideal demanded two things. There must be parks and groves of adequate size for entertaining, and the houses themselves must be sufficient to accommodate numerous guests and a retinue of servants. It was customary for the guests to come and spend at least

several days; often they remained longer. Hence we find a series of salons and card rooms where, in the evenings, the guests might move about and divert themselves as their inclination led them.

When we remember that ordinarily many of these villas were occupied by the masters and their friends during the autumn only (the bailiffs, gardeners and *contadini* presiding there the rest of the time), and that this brief occupancy was a season devoted mainly to extensive entertaining, and entertaining very often carried on in a somewhat ostentatious way, we can understand the lack of a certain domestic quality in these country houses. That domestic quality they doubtless would have had, at least to a far greater degree, if they had been used as homes during a large part of the year. A somewhat modified interior arrangement would inevitably have obtained. As it was, the more purely domestic qualifications did not loom with large importance and, judged by the domestic standards to which we are accustomed, they must needs present a somewhat artificial and, at times,

stilted aspect to one in quest of domestic values.

The gardens too, full of delight and stately beauty as they often were, reflected the same underlying trend of insistent formality. There were long pleached walks, great expanses of lawn, systematically disposed avenues, imposing stretches of well regulated woodland, fish ponds and streams confined within carefully ordered bounds; casinos, grottoes, urns and statuary, set to terminate vistas, to yield a note of contrast, or to give due accent to some feature of the gardening composition. Order, the formal massing of luxuriant foliage, and the divers qualities of leafage were the chief elements of charm.

The flower garden was often merely a utilitarian adjunct to afford the requisite supply of cut blooms and was not, as it was in the average Tuscan villa, a spot of intimate delight, a veritable outdoor living place and inseparably associated with the house itself, whatever other features of more extensive planting and garden layout there may have been in addition.



Entrance on Long Façade of Sculpture Gallery



VIEW OF SOUTH FAÇADE FROM OLD DRIVE



GENERAL VIEW FROM STREET
THE VILLA BERCHET, NEAR MESTRE, ITALY



End Facade of Minor East Wing

Such were the requirements of the clients for whom Palladio and those who came after him were called upon to design villas—a task thoroughly congenial to the temperament and ideals of the great architect, we may well believe, and no less congenial to his successors. Without an adequate understanding of these conditions, and of the comparative permanence of the requirements which made it possible for the Palladian tradition to continue with such vitality, we should be in danger of misinterpreting all the villa architecture of the Veneto. Having formed this concept of the mode of life these villas were designed to accommodate, we may now address ourselves to the Villa Berchet in particular.

Though in general style quite representative of what was best in the work of the later period, the Villa Berchet is distinctly unusual in its plan, and herein lies one element of special interest. By a very irregular and asymmetrical scheme of massing, the several continuous parts of the structure are grouped about three sides of a large stone-paved *cortile*, while a part of its west side opens out into another, smaller and narrower, that extends bay-wise into the western block of buildings

and does duty as a flower garden. Thus, in two respects, there is a wide departure from the original usage of Palladian tradition, in the chain of which the Villa Berchet forms a late and exceptional link. The plan, besides being asymmetrical, is apparently more or less fortuitous, and the *cortile* occurs as an integral feature of the scheme.

A study of the plans of villas designed by Palladio himself, and a comparison of the majority of those throughout the Veneto designed by his successors of various dates will show, for one thing, a most punctilious adherence to the principles of balance; when it was found inexpedient or impossible to make the two corresponding parts of the plan on opposite sides of the main axis exactly balance each with the other in internal arrangement, as was frequently the case, the exterior, at least, exhibited a symmetrical disposition of parts on each side of the central features. It may be observed that although Palladio in designing villas time and again made use of wings projecting forward from the central block of his composition, the space partially enclosed in this way could not strictly be called a *cortile* in the sense usually con-

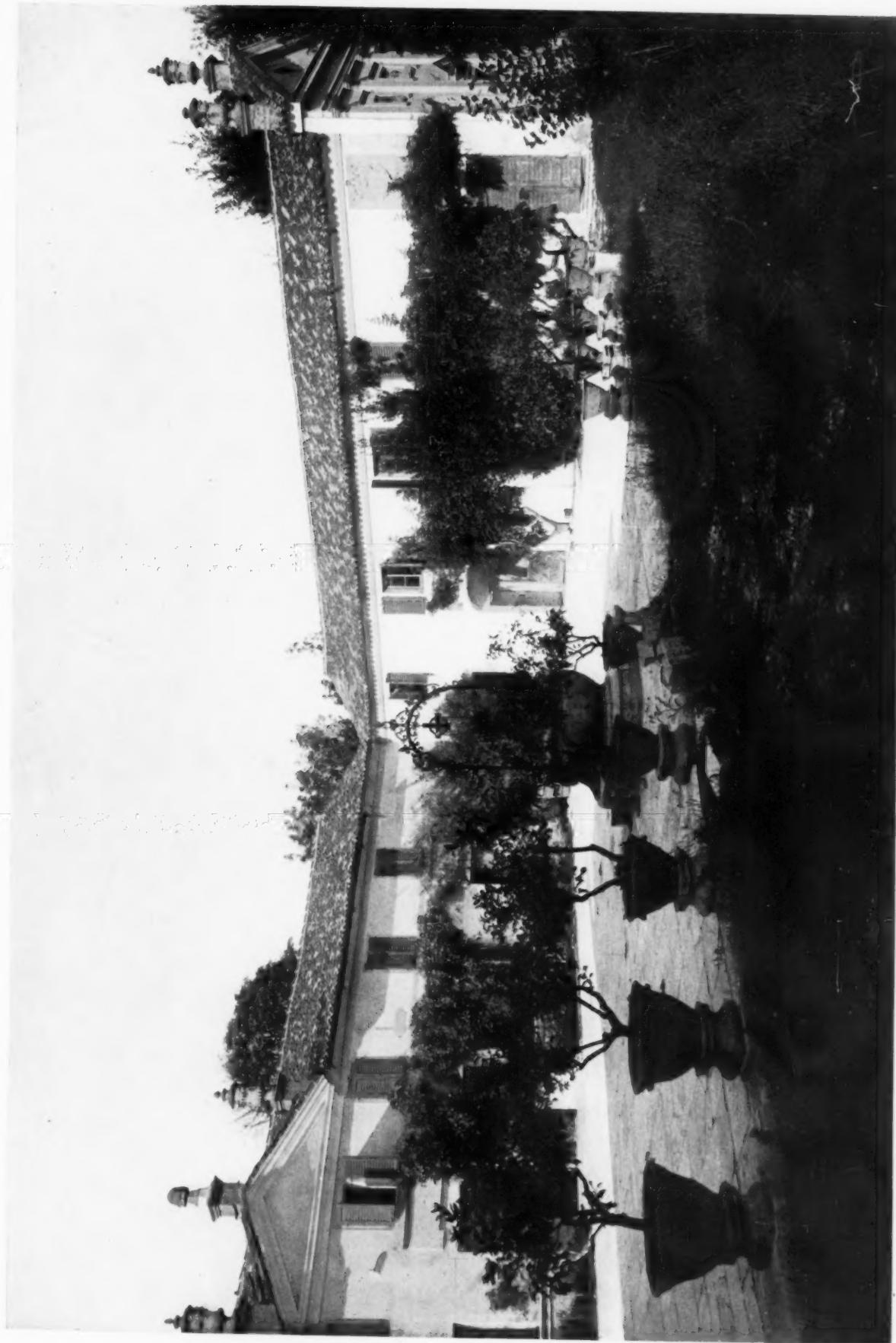
veyed by that term, and it was his wont to plan the main portion of the house as a solid block. The great central hall or *sala*, which he customarily employed, took its place, and this central hall—according to Venetian use, lighted by massed windows at the ends, while the rooms opened from each side, thus in effect serving in lieu of a *cortile* where ground in the city was too precious to be given over lavishly to open spaces—was a local tradition strongly enough established to induce later architects to adhere to it.

The explanation of the fortuitous plan of the Villa Berchet is probably to be found in successive dates of construction, the formal front of the east wing and the urn-topped pediment of the long block at the back of the *cortile* being subsequently added to bring this rambling assemblage of older buildings into measurable conformity with the architecture of the more studied west wing that abuts on the highway. Be that as it may, both the composition and the general aspect of the buildings embody appreciable elements of charm, and although there is little in the plan, considered in detail, to commend it for modern adaptation, the ensemble is not without considerable value.

May, 1921

THE ARCHITECTURAL FORUM

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NORTH AND EAST SIDES OF LARGE CORTILE
THE VILLA BERICHE, NEAR MESTRE, ITALY



Main Floor Plan

Agreeably to the custom of the country, the walls are of brick coated over with stucco and the roofs are of reddish tiles. The stucco, in this case, is of a gray hue, the shutters are green, the vases adorning the roof are of terra cotta painted the color of the walls, and the empaneled bas-reliefs are painted the same, thus bringing the building into color unity.

The treatment of the south and west fronts of

the main portions of the house is interesting and ingenious; across each facade there extends an order of pilasters with the entablature interrupted by the slightly recessed bays, so that what are actually sections of architrave, frieze and bed-mould appear to be imposts upon the capitals of the pilasters. The vases upon the roof continue to carry the eye upward and give sufficient vertical accent to prevent the building from appearing squat. Of course the whole scheme simply exhibits the ultimate adaptation of structural members

to a purely decorative function and, according to all puristic theories, it should be reckoned thoroughly heterodox. Nevertheless, though theoretically indefensible, it is a clever bit of composition, and an effect that has been so adroitly managed once might well be repeated without anyone being the worse for it.

The ruffled critic will find more consolation in



The South Façade of Sculpture Gallery



EAST WING FROM THE LARGE CORTILE



CENTRAL PORTION OF LARGE CORTILE
THE VILLA BERCHET, NEAR MESTRE, ITALY

contemplating the south end of the east wing—a part of the house that has served by turns the purposes of billiard room and laundry—and still more mental balm and delight in viewing the casino or rotunda, the glistening white walls of which flash out from the dense green of the long *viale* of over-arching limes. The garden setting corresponds, in the main, to the general description of villa grounds which has already been given. The casino once faced upon a broad lawn, but during the recent war this was ploughed up and planted in corn and has not yet been restored to its original condition.

Many of the most interesting villas of the Veneto escape the attention of students, or those in quest of inspiration, by reason of their being far from the beaten highways. These villas have been overlooked or else forgotten by the writers of guide books or the authors of histories of art, and even when their existence is known it is not always possible to find them, because even in one Italian province there may be several tiny hamlets having the same name. Writers on the villa architecture of Italy are apt to devote their attention to the more important examples, but the minor villas stand in close artistic relationship to their larger and more sumptuous neighbors, and prove

that large and small alike were often designed or inspired by the great architects of the renaissance.

The architects of this period possessed in a high degree the happy faculty of being able to provide a setting both suitable and beautiful for the life intended to be lived within their villas, whether they were destined to be peopled with the brilliant personages of an ecclesiastical court, with the splendid members of a patrician family, or by the humble members of a *contadini* household, and the skill and ingenuity with which they arranged or disposed their motifs results always in a wide variety of picturesque compositions. Villas of a somewhat minor class are often full of inspiration to present-day architects, for Italian villas of not too great size may well afford models upon which modern country homes may be studied. Their architects intended their villas to be lived in—to be comfortable country houses—and they rarely made the mistake of sacrificing convenience or comfort to architectural interest or decorative effect. Then, too, the materials with which they built were such as might be had today in almost any part of America—brick, for the most part, stuccoed or merely whitewashed for exterior building, and the simplest walls and woodwork within.



Sala Facade on Small Cortile



House of A. C. Ernst, Esq.

Cleveland, Ohio

"Euclid Golf," Cleveland, Ohio

HOWELL & THOMAS, ARCHITECTS

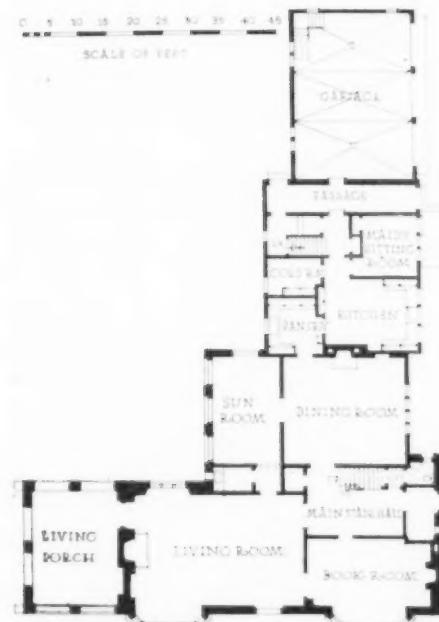
By HOWARD DWIGHT SMITH

TO one who does not know Cleveland, the term "Euclid Golf" might convey the idea of a more or less interesting game with some form of mathematics combined with the manipulation of balls and clubs. To those who do know Cleveland, with anything more than a mere superficial acquaintanceship, however, the term has an entirely different meaning. To them it signifies a district centering about a wide curved boulevard, crossed by a dozen or so winding streets of generous width, an abundance of fine old trees and a sprinkling of substantial houses which are, as suburban houses go, quite likely in size and character. It is a residential section which has established its high character as a community both from a civic and from an architectural viewpoint, so that a discussion of it as a real estate venture ceases to partake of the nature of commercial advertising, and becomes an item of news value and of common human interest.

There are examples of real estate development where architectural ideals have been maintained, but where financial success has been more or less dubious. There are also examples, only too numerous, which have been of unqualified commercial

success but which architecturally have left much to be desired. Hardly a city of any size has not its subdivided suburban districts. A few of these stand out and are recognized among real estate operators as most successful, for one reason or another; among these may be mentioned Forest Hills, L. I., Roland Park in Baltimore, Shaker Heights in Cleveland, and the Country Club district in Kansas City.

The story of Euclid Golf really begins with an interest taken by Mr. B. R. Deming of the developing company in some residential work designed by Howell & Thomas, in the vicinity of Newark, Ohio. This interest led Mr. Deming to consult this firm when he became charged with the task of subdividing a portion of the old Euclid Golf tract. Business and professional relations were based upon the real estate man's confidence that his architects were interested primarily in the expression of certain practical and artistic ideals, and upon the architects' feeling of assurance that the expenditure of funds in development and building would be governed only by a reasonable desire to attain these ideals without extravagance. Consequently, the



First and Second Floor Plans. House of A. C. Ernst, Esq.

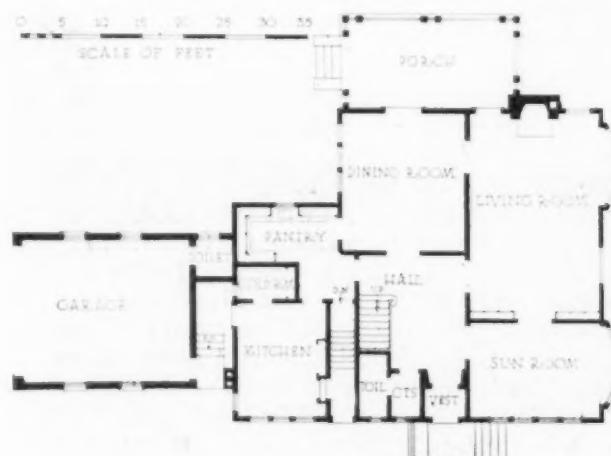
architects' services were sought in the formation of the original general policies and in the discussion of ideas and schemes. The Euclid Golf Allotment is possessed of great natural beauty to begin with—plenty of old trees, as these illustrations testify, and of just sufficient variation of levels at its entrance to set it well apart from the surrounding territory. The layout of boulevards and drives has been made with a view of making the most of these natural advantages, and of providing sufficient variety of streets and roads to give interest, but to avoid the labyrinthine confusion which usually results from an effort to give every thoroughfare in a new suburb interest and individuality by devious windings. The possibilities of the Euclid Golf site were studied and the layout made accordingly, and the original building restrictions were drawn up with a view to establishing a censorship, which has usually been regarded by real estate men as a doubtful propo-



sition. Having determined the most advantageous street locations, this censorship has been exercised on building operations to insure the continuation of the policies established.

House restrictions in Euclid Golf vary according to locations. The aim in establishing these restrictions has been to keep the character of the neighborhood up to the highest standard, and yet to have restrictions that permit the kind of development which increases land values. One restriction provides that "all houses built in Euclid Golf shall have plans approved by the company." In making this restriction the aim has been to assist the home builder rather than to limit him. Those who build good houses under these restrictions, homes which are the result of study and careful thought, have some assurance that neighboring houses will not only represent a certain minimum of investment but will also harmonize with the established character of the streets and their general setting. The sincerity and intelligence with which this censorship or supervision is applied is the measure of its success. Lax or biased application of such a provision has spoiled the architectural possibilities of more than one subdivided district.

The quality of service rendered by the general study of the chief problems of the Allotment as a whole may be well illustrated by the story of Mr. Deming's own home. This house, which was published in *THE FORUM* for May, 1917 was built from plans which were developed from some origi-



First and Second Floor Plans. House of W. R. Mitchell, Esq.



nal studies made to show Mr. Deming that there were some interesting architectural possibilities even in a certain discarded strip at the entrance to the Allotment—an irregular strip some 500 feet long, not over 40 feet wide at its widest point, and dropping off from the boulevard into an abandoned quarry. An interesting succession of rooms on various levels, a small dam in the quarry rill, overhanging bays and a long, narrow garden strip, with an exterior dress of stone, stucco and half timber, which combines some Tudor and some mediaeval traditions of the north of France, have produced a quaint continental charm which straightforward, simple domestic examples rarely possess.

The restrictions placed upon building in Euclid Golf are perhaps no more rigid or stringent than those in vogue in many other subdivided areas. Valid restrictions, those which are incorporated into contracts for the sale of lots, and which can be properly enforced, are quite common. First and foremost, a building line restriction is always recognized as necessary; a minimum cost restriction is perhaps the next in importance. In some residential sections there is an effort to restrict the character of buildings to single dwellings and to limit the minimum of lot frontage for any building. Permanent easements of certain widths on the sides of lots permit the location of service lines elsewhere than on the thoroughfares and prevent structures being built up to the lot lines.

These restrictions are productive of much good.

They insure fundamental things to a community and make investment reasonably stable. The addition of a restriction which gives a real estate company the censorship of any set of plans is of doubtful value unless it is rigidly enforced, and unless some carefully studied scheme guides all decisions in giving or withholding approval. A home owner who has the minimum amount invested in his property, in a modest but attractive cottage, must be protected by the company in some way from having an expensive, large sized structure built on an adjoining lot, and this protection must be forthcoming even at the risk of losing a valued prospect. On the other hand, one who chooses to build a large, expensive and attractive house on any given lot should be protected from the minimum price builder who might build on adjoining property. Then, too, certain restrictions which tend to uniformity or harmony are of importance when properly enforced. The well known requirement of a red roof at Forest Hills Gardens has produced a uniformity of color which has not interfered in the least with interesting variety of architecture. The value of this particular restriction is emphasized by the striking contrast with the nondescript character of adjoining tracts, where less idealistic restrictions have obtained. No such special restriction has been attached to the sale of land in Euclid Golf, but that requiring the approval of plans by the Allotment Company has been upon the advice of Messrs. Howell & Thomas, who have been governed solely



House of W. R. Mitchell, Esq., Cleveland, Ohio

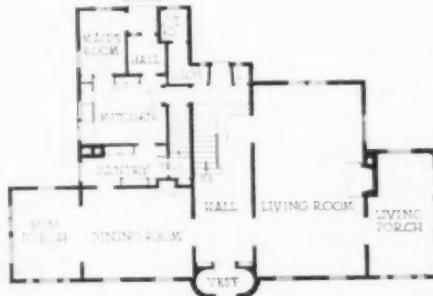
by the thought of establishing harmony and reasonable variety in each of the particular localities.

At the risk of appearing arbitrary in the dictation of style and character for any particular locality, the B. R. Deming Company early in the development commissioned Howell & Thomas to design certain houses for the purpose of setting standards for various portions of the Allotment. We find, therefore, in different sections, such houses as the large Lutyens type of English house now owned by A. C. Ernst on the large and important corner lot on the Allotment at the junction of Fairmount boulevard and Ardleigh drive, or the rambling New England colonial frame for Mr. R. G. Pack on a 160-foot inside frontage on Tudor drive. Houses of a smaller type, such as the New England gambrel roof cottage for W. R. Mitchell on a 70-foot inside lot on Woodmere drive set standards of simplicity and excellence which can be pointed to with reasonable pride.

The establishment of a style in any group of houses, or in any group of buildings for that matter in this day of eclecticism, is a difficult matter because of the great allowable latitude. Ease and

facility of construction in any material with few structural restrictions make it possible for us to use exterior dress of almost any style regardless of its significance, and regardless of the restrictions which might have governed the original use of any style. By way of illustration, let us consider a single example of the influence of structural restriction on the development of a style. In the Cotswold district in England, heavy local stone has been used for walls and stone slabs for roofs for centuries. The limit placed upon the lengths of roof timbers to support the weight of these heavy roof slabs placed a certain limit on the widths of rooms. Present-day structural methods eliminate practically all local restrictions, and this makes possible the use of a variety of styles and a diversity of character in any group of buildings which may be fatal to its harmony and restfulness if not properly controlled. Subdivision restrictions which permit the erection of a frame colonial, a Tudor half timber, an English stone and stucco, a Spanish type, a Georgian and a mission style building on as many adjoining 60-foot lots allow the violation of a principle of harmony which is just as valuable to the orderly development of a residential tract as is a uniform building line. The setting of high standards and the living up to them are factors in Euclid Golf's success as a high class residential subdivision.

Consideration of some of the individual houses of the group will help in forming an opinion of the success of the work from the architect's point of view. The house for Mr. Ernst represents, perhaps, the boldest financial venture of the entire Allotment. Here is a house covering an area of approximately 3,500 square feet and having a cubage of approximately 135,000 cubic feet, exclusive of garage, which was designed and fairly on toward completion before a client entered into the proposition. To many practitioners the thought of erecting a residence of such proportions without the restraint or the spur of a client would seem like a bold venture indeed. In the house



First Floor Plan



Second Floor Plan



House of Colonial Type, Known as "Shingled Westover"



ENTRANCE FRONT



HOUSE OF R. G. PACK, ESQ., CLEVELAND, OHIO

HOWELL & THOMAS, ARCHITECTS

MAY, 1921

THE ARCHITECTURAL FORUM

PLATE 67



GARDEN FRONT



GENERAL VIEW

HOUSE OF FRED NICHOLS, ESQ., CLEVELAND, OHIO

HOWELL & THOMAS, ARCHITECTS



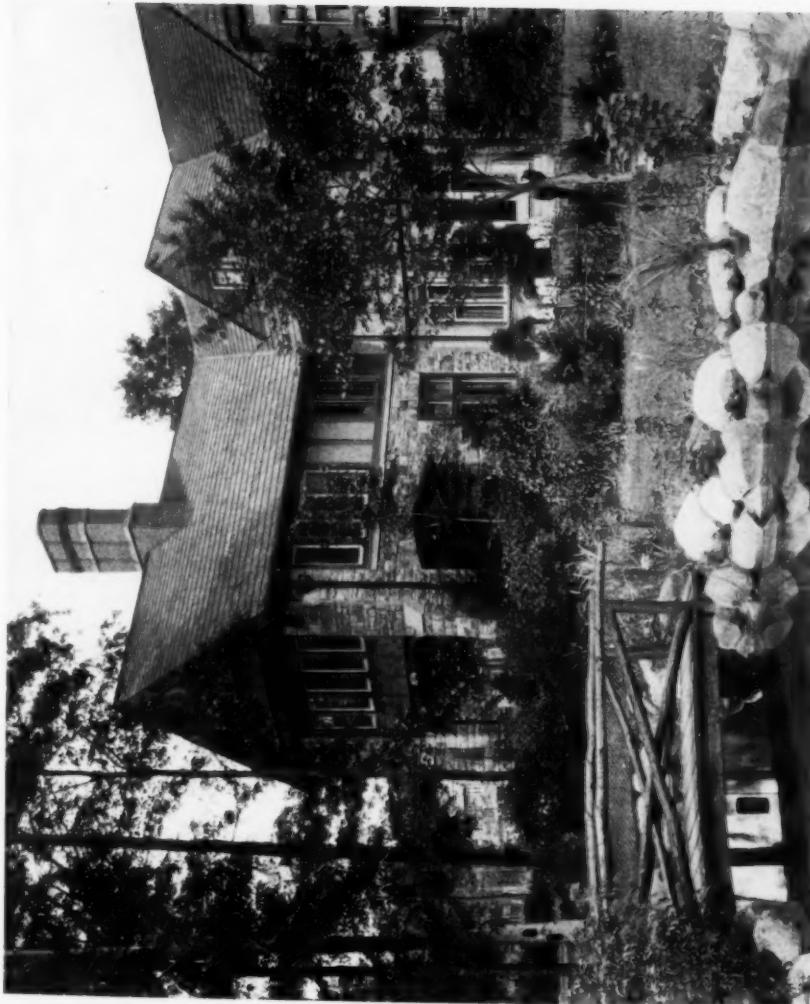
MAY, 1921

THE ARCHITECTURAL FORUM

PLATE 68



DETAIL OF ENTRANCE FRONT



VIEW FROM GARDEN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE OF FRED NICHOLS, ESQ., CLEVELAND, OHIO
HOWELL & THOMAS, ARCHITECTS





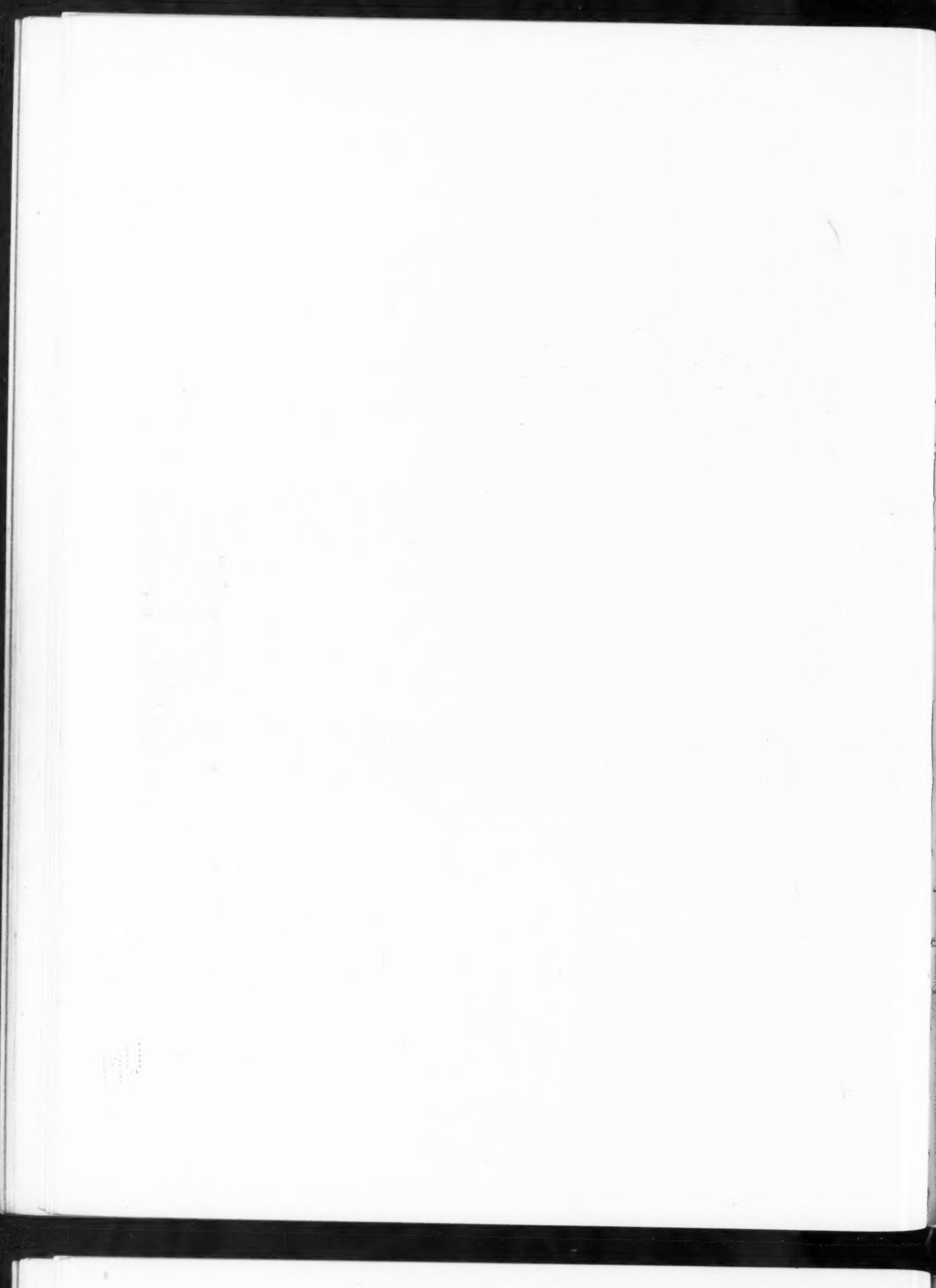
VIEW FROM STREET

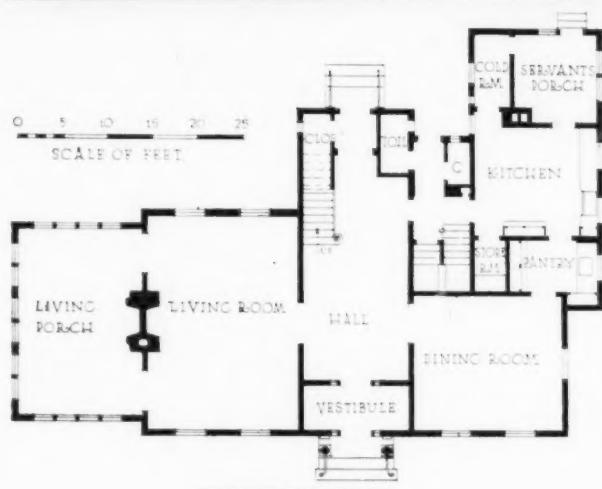


GENERAL VIEW

HOUSE OF THOMAS WHITE, ESQ., CLEVELAND, OHIO

HOWELL & THOMAS, ARCHITECTS





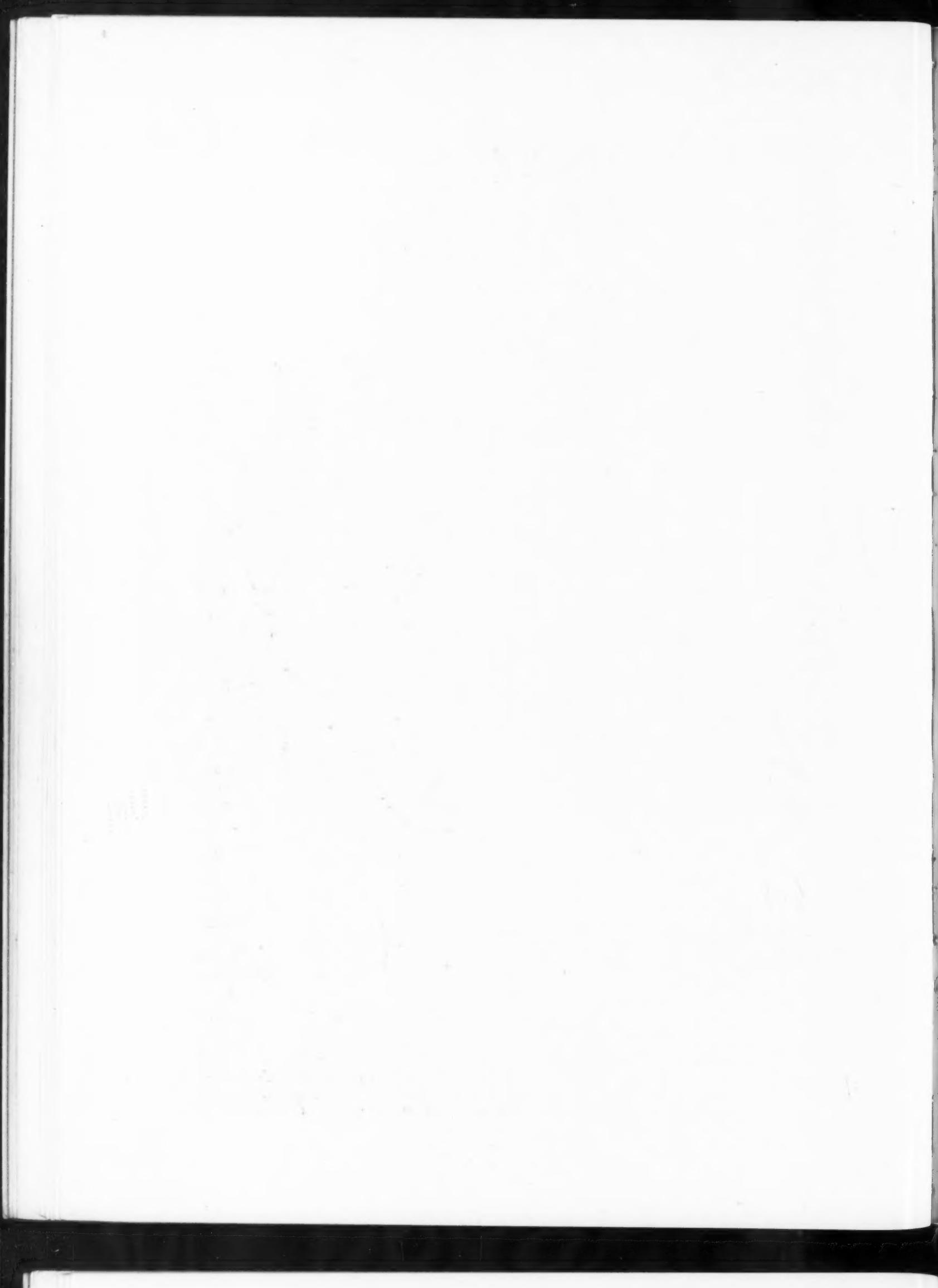
FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE OF MRS. W. C. SCOFIELD, CLEVELAND, OHIO

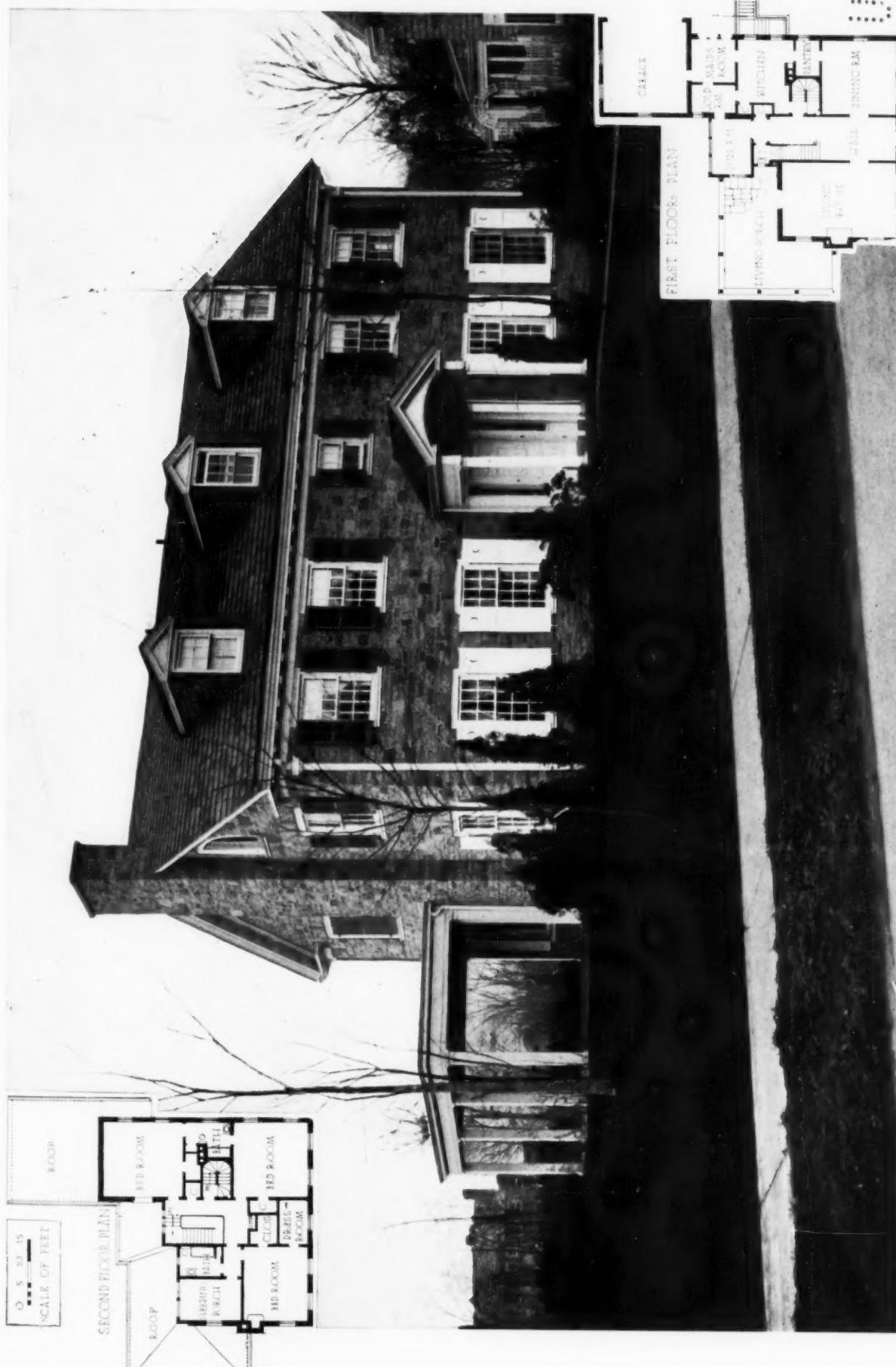
HOWELL & THOMAS, ARCHITECTS



MAY. 1921

THE ARCHITECTURAL FORUM

PLATE 71



VIEW FROM STREET

HOUSE OF ROLAND W. WHITE, ESQ., CLEVELAND, OHIO
HOWELL & THOMAS, ARCHITECTS

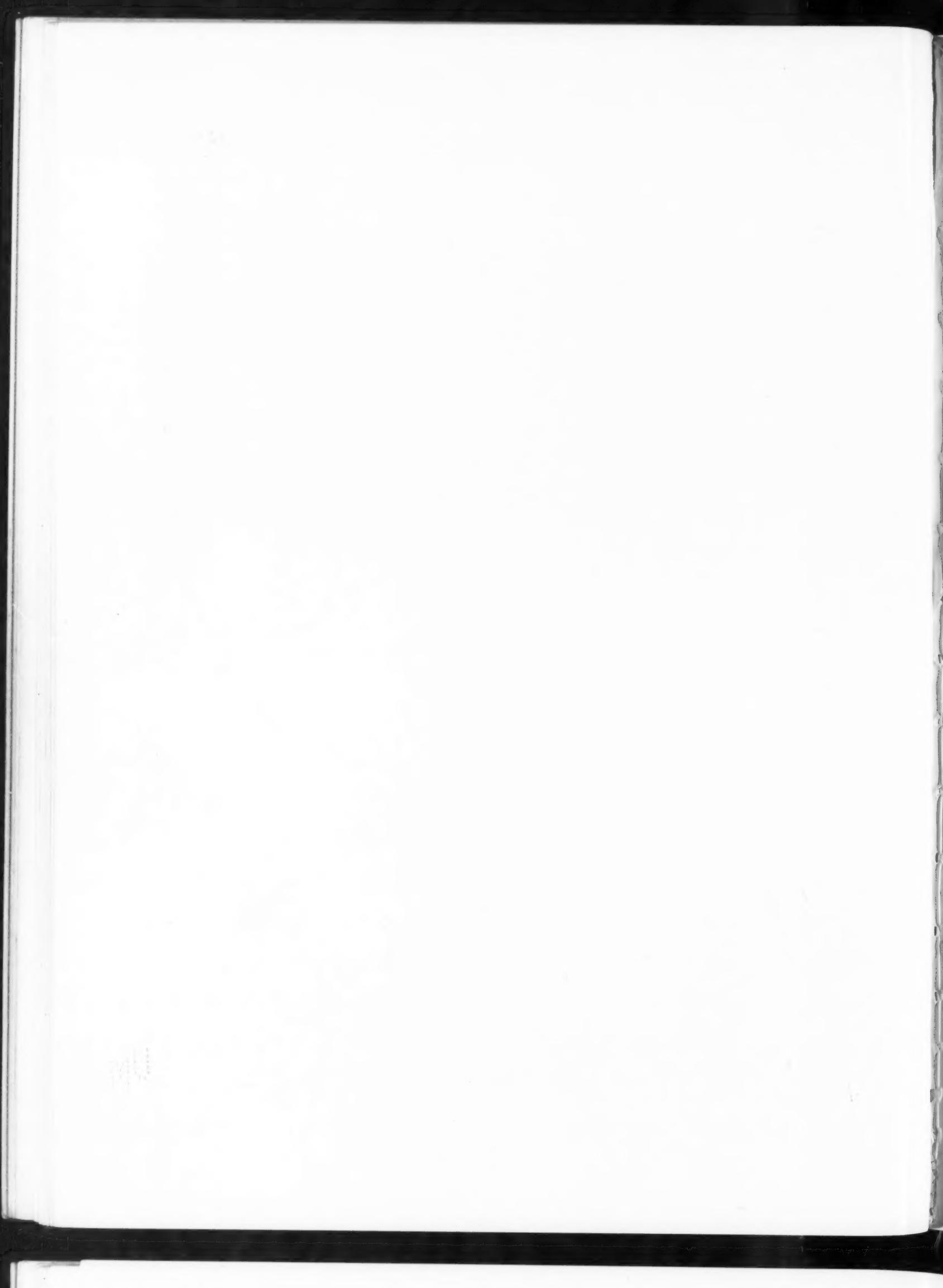


STREET FRONT



HOUSE OF C. A. FORSTER, ESQ., CLEVELAND, OHIO

HOWELL & THOMAS, ARCHITECTS





House of J. C. McNutt, Esq., Cleveland, Ohio

which now bears Mr. Ernst's name the architects have produced an English manor house of the Lutyens type. This style, if such it may be called, represents the best contemporary domestic work in England, possessing originality without grotesqueness and quaintness without faddishness. Here the gables and chimneys and bays are of simple mass; the character of the random ashlar stonework in the walls and the judicious use of cut stone trim are distinctive.

Of only slightly lesser size is the house on Fairmount boulevard at the corner of Woodmere drive, now owned by Mr. Fred Nichols. This house, built in 1916, is also of the Lutyens English type, a continuation of the Tudor tradition. The house is of stone, stucco and half timber and because of its more developed planting it presents a more intimately domestic appearance than the Ernst residence. The plans of these two large houses are somewhat similar in the arrangement of the entrance features in secondary positions, and in the emphasis of the intimacy between the living portions of the houses and the grounds about them. The stonework of the Nichols residence is excellent, warm in color and of fine texture. It is all local material, having been taken from the excavation of a sewer in an adjoining street. The half timber work in this house is not as free in its treatment as is characteristic of the original Tudor work. Perhaps here the restraining hand of economy has played its part and forbidden the necessary carving upon the verge boards of the gable, and denied the accidental roughness to the vertical lines of half timber.

A goodly number of stucco houses have been built

in Euclid Golf. Some are on frame with metal lath, and some on hollow tile and brick. Four of these houses are illustrated. That for Mr. C. A. Forster in Delamere drive is built upon a plan with living room and dining room disposed symmetrically about a center hall, but with a living porch built into the mass of the house on the living room side, which throws the exterior entrance feature decidedly off center. The inclusion of an upper story porch within the mass of a house, in some such fashion as is here accomplished, solves reasonably well one of the hardest problems in residence design—that of locating the sleeping porch; only the difficulty of treating the broad openings of garage doors as a part of any house design is as hard a problem in modern residential work.

The high roof, the denticulated cornice and the heavy stucco quoins, trim and belt course of the residence of Mr. Thomas White in Delamere drive give much the feeling of the minor French chateaux. The interesting asymmetry of the lateral facade, with its huge chimney, large stair window and trellised entry porch, does not detract from the interest of the single axis of the narrow front which faces directly on the street. The emphasis of this narrowness toward the street is doubtless due to the fact that the property has only a 75-foot frontage.

In point of number, the examples of Georgian and colonial houses by Howell & Thomas in Euclid Golf exceed all other styles, and aside from the two rather ambitious English examples already mentioned these Georgian and colonial houses represent the best of the entire interesting group. Four very successful examples represent the colonial style

built in frame. One of these is known to the architects and the Allotment Company as "Shingled Westover." The architects have frankly appropriated the design of the well known James River mansion and translated it into frame and shingles, using the exact composition and proportions with a few minor changes in the main door, and adding an interesting round cornered vestibule and a porch at either end of the facade. The plan is that of a real Georgian center hall house with the stairs at the rear of the hall in a long straight flight to a high landing and a short return to the second floor level. The presence in any group of houses of so conservative and acceptable an architectural composition as "Shingled Westover" gives a tone and sets a standard of character which is beneficial to any community.

The house for Mr. J. C. McNutt, Woodmere drive, presents an interesting combination of plan and elevation. It is of a plain, New England type with narrow width siding and very thin mouldings, as fine in detail as interior woodwork, which was characteristic of the early New England houses. The view from the front gives the impression of a center hall type, with a bay window on either side of the entrance door. The entrance from the street is at one side of the house leaving the center door in intimate relation to the open front lawn. A glance at the plan, however, shows that the center door and one bay window belong to the living room and the other bay window to the sun room—a most interesting use of a type elevation and a readjusted plan.

The house for Mr. R. W. White, Delamere drive,



Second Floor Plan



First Floor Plan



House of A. C. Blair, Esq., Cleveland, Ohio

is of that substantial Pennsylvania ledge-rock colonial that is set so close to the ground that it looks as if it had always been a part of the 175-foot lot upon which it is placed. It is the typical center hall type, with a projecting central door hood so characteristic of the middle states colonial style.

If any choice can be made between the house for Mrs. W. C. Scofield, Fairmount boulevard and Woodmere drive, and the house for Mr. R. G. Pack in Tudor drive, it might lie with the latter because of the very successful handling of a difficult asymmetric composition. Here is a building which includes a sleeping porch within the mass of the structure and a facade which assembles seven different types of



Two Cottage Houses Used to Block Out Surrounding Developments

openings, including a door, a full length stair landing window, a triple window in the dining room, a five-windowed living room bay, three single bedroom windows and open porch arches as well. This composition depends for unity on the great contrast of its whiteness with the dark mass of foliage about it, upon the skill with which uniform scale has been maintained, and upon its broad expanse of plain roof and straight, continuous eaves. It is a most interesting expression of an asymmetric plan. Another problem in the arrangement of door and window openings was met in the brick house of Mr. A. C. Blair.

Mrs. Scofield's house is the other extreme in its symmetry and simplicity, its facade presenting only two types of openings—the entrance door and one

type of double hung, shuttered window. Like the Pack house it benefits by the strong contrast between its extremely white mass and the dark foliage about it. The tree grouping about this house is particularly happy and gives a setting quite befitting the conservative style of the house itself. The shingles of the side walls are almost as heavy as the hand-riven clapboards of New England.

The cornice overhang is generous, the rafters are exposed, the chimney whitewashed and the well proportioned Doric portico tells a story of colonial refinement which is interesting and refreshing.

A number of small houses for investment purposes have been built in the colonial character in parts of Euclid Golf. These are moderate priced houses, but they set a standard of excellence worth living up to, and act as an incentive to the home builder.



First and Second Floor Plans of House at Right

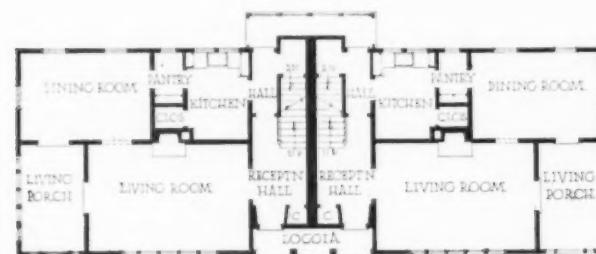


First and Second Floor Plans of House Shown Above

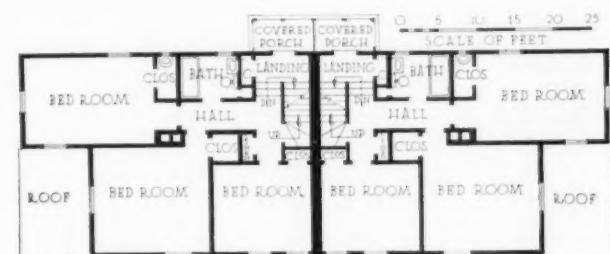
An interesting problem confronted Euclid Golf at the head of Tudor drive. The solution of this problem may be taken as the typification of the spirit which is back of Euclid Golf and which has made it so successful. South of St. James parkway, which forms the southern boundary line of the major portion of the Allotment, there has sprung up a poor class of investment houses built on irregular shaped lots with no restrictions, and presenting an unsightly vista from Tudor drive. The unrestricted lots on the south side of St. James parkway were purchased and those directly at the head of Tudor drive were combined to form the site for a renting two-family house which is illustrated here. The main feature of the front of this double house is the three-arched loggia directly on the Tudor drive axis. This loggia unifies an otherwise bifurcated composition, and places an effective focal point in a screen which protects the Euclid Golf community from just the thing which it has sought to eliminate within its own precincts. On the two adjoining lots the architects, Messrs. Howell & Thomas, have built two interesting little cottages, models of modesty and economy, which add their part to this protective screen about Euclid Golf.

The development of the suburban districts throughout the country may be studied, and it will be found that almost every subdivision which is considered especially successful has been directed by the ability and vision of one personality, which has exercised control over its policies. From the nature of things such a personality is not apt to be the architect's, but in the most successful instances the advice and service of architects have been important factors in the achievement of results. Architects may be regarded as necessary adjuncts, or even as necessary evils, in many cases, but experience with group projects, such as industrial housing and also with larger developments, has fully established the fact that the properly trained architect may be confidently depended upon to produce eminently satisfactory results in group or plot planning, as well as in the actual building.

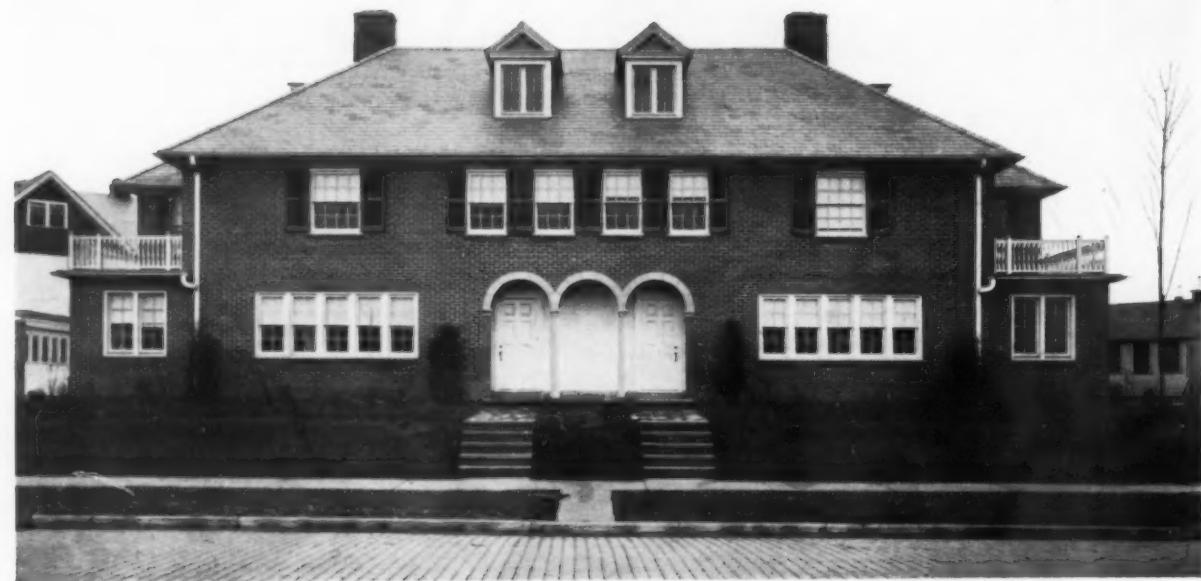
Too frequently the development of speculative real estate is governed only by business expediency; the results in Cleveland prove, however, that it is both good business and of tangible value to the community for promoters to recognize the special qualifications of the architect and accord him generous and sympathetic co-operation in his work.



First Floor Plan



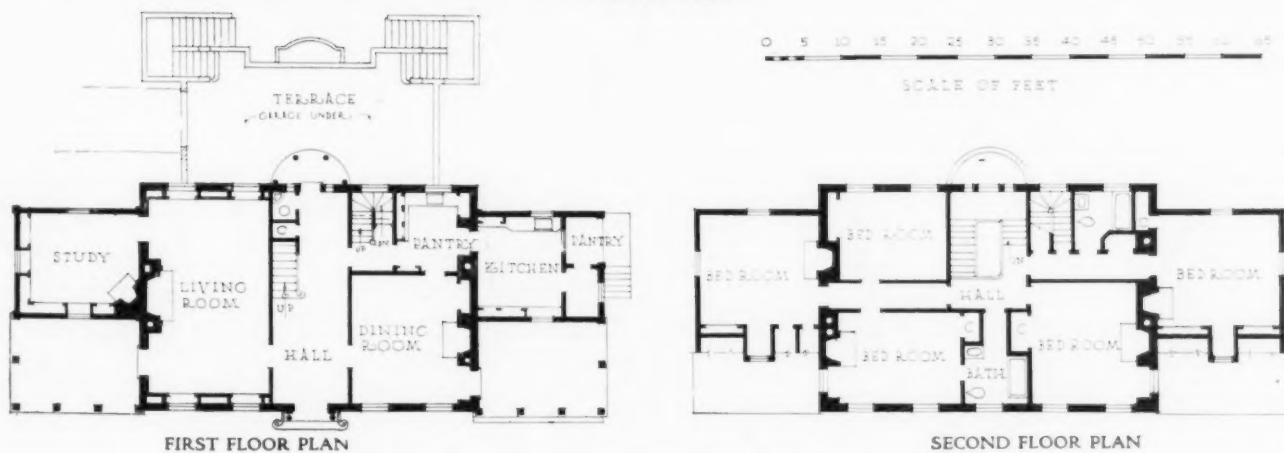
Second Floor Plan



Double House at Boundary of Allotment, on Axis of Tudor Drive

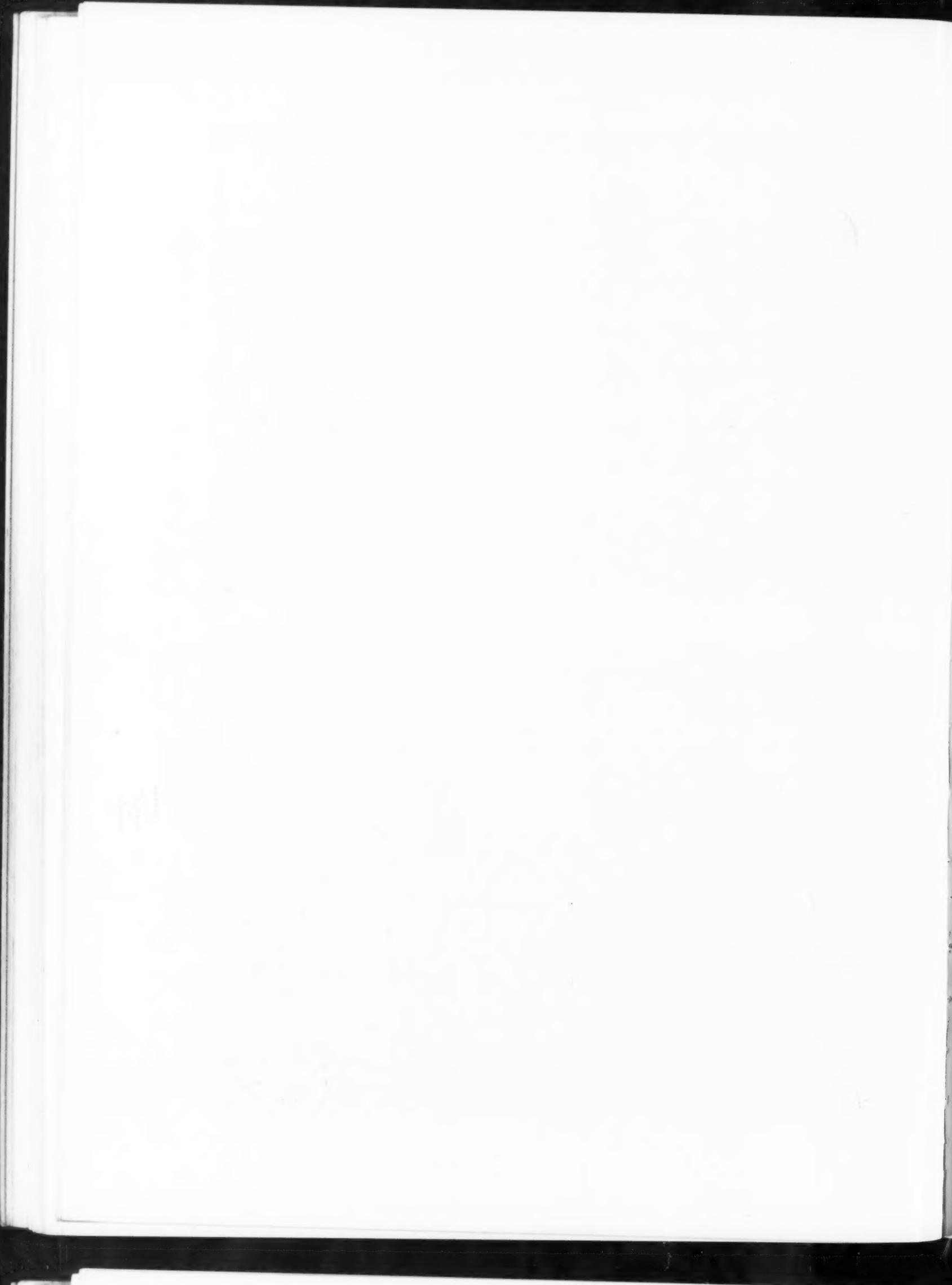


GENERAL VIEW



HOUSE OF DR. LYNN FULKERSON, FIELDSTON, NEW YORK, N. Y.

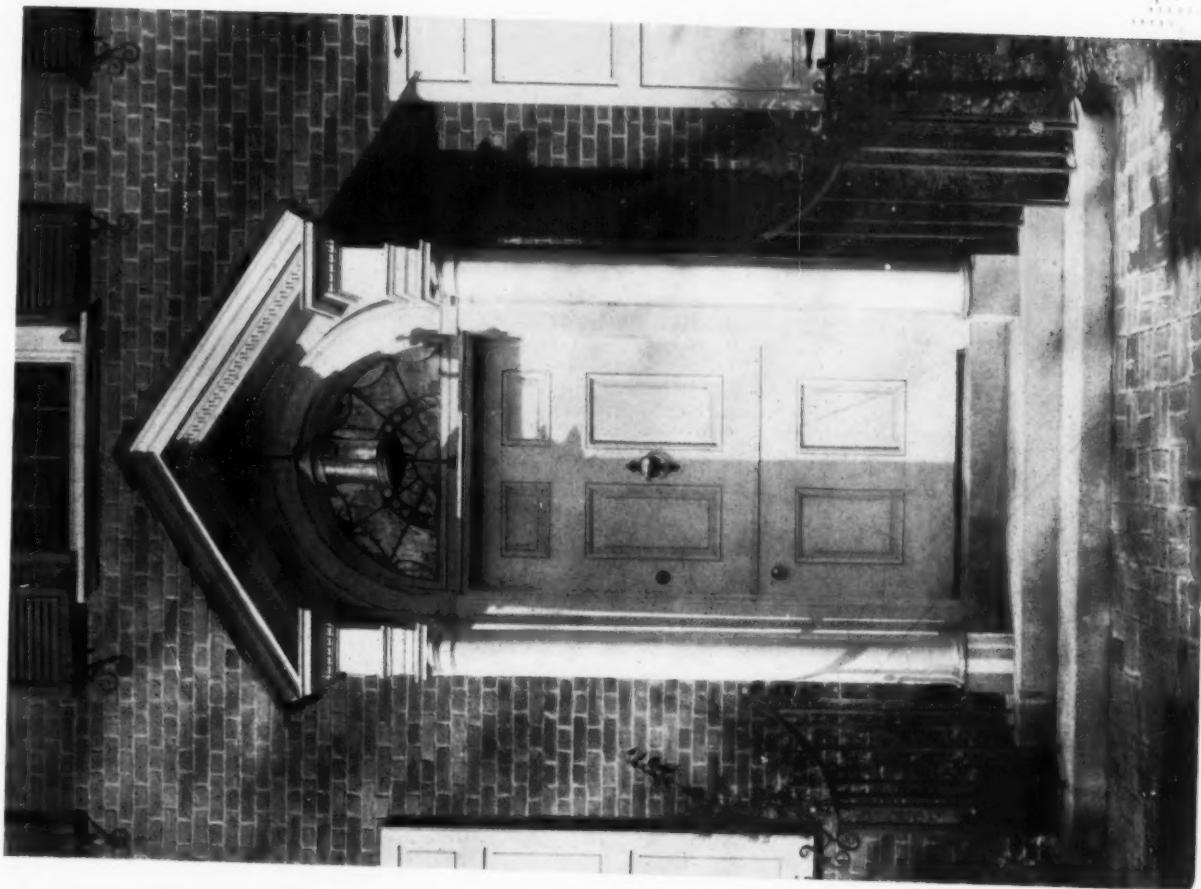
DWIGHT JAMES BAUM, ARCHITECT



MAY, 1921

THE ARCHITECTURAL FORUM

PLATE 74



TERRACE AND FRONT ENTRANCES

HOUSE OF DR. LYNN FULKERSON, FIELDSTON, NEW YORK, N. Y.
DWIGHT JAMES BAUM, ARCHITECT

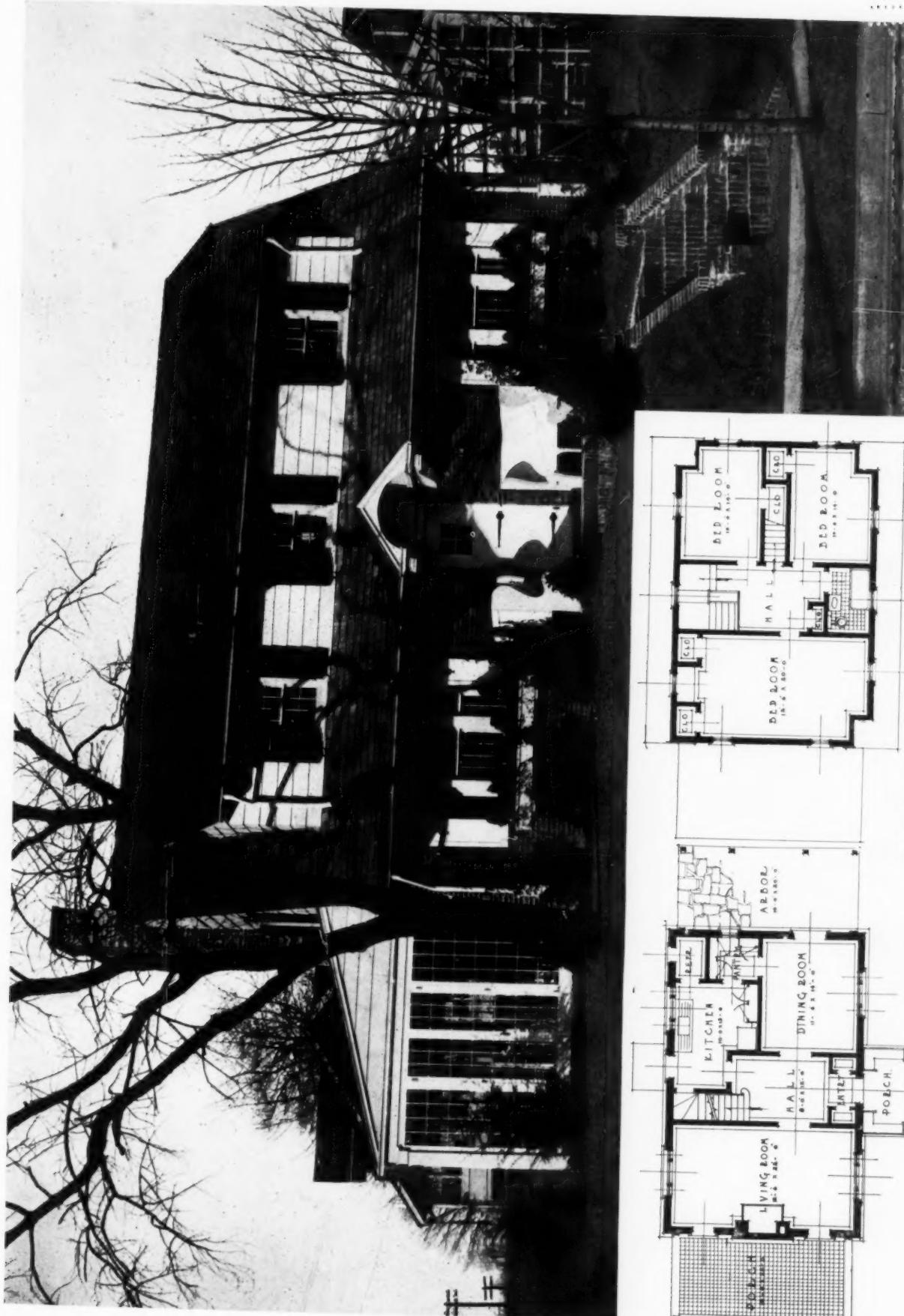


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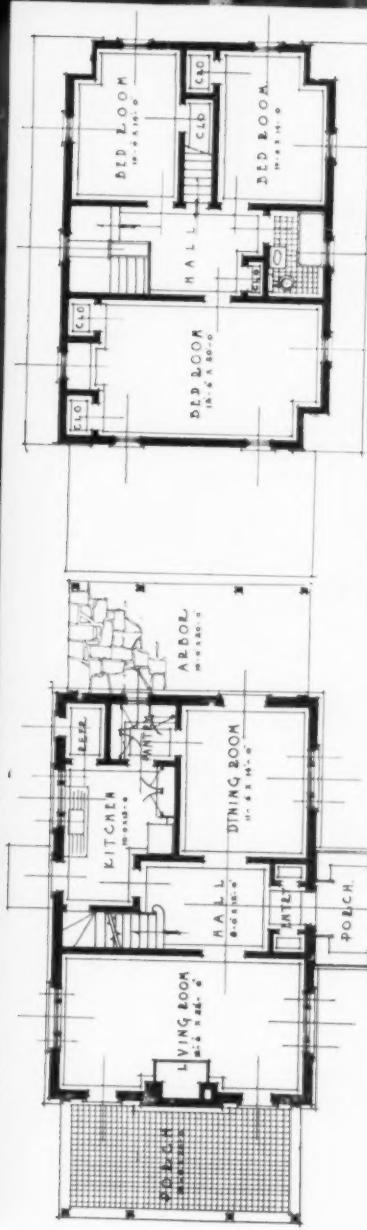
MAY, 1921

THE ARCHITECTURAL FORUM

PLATE 64



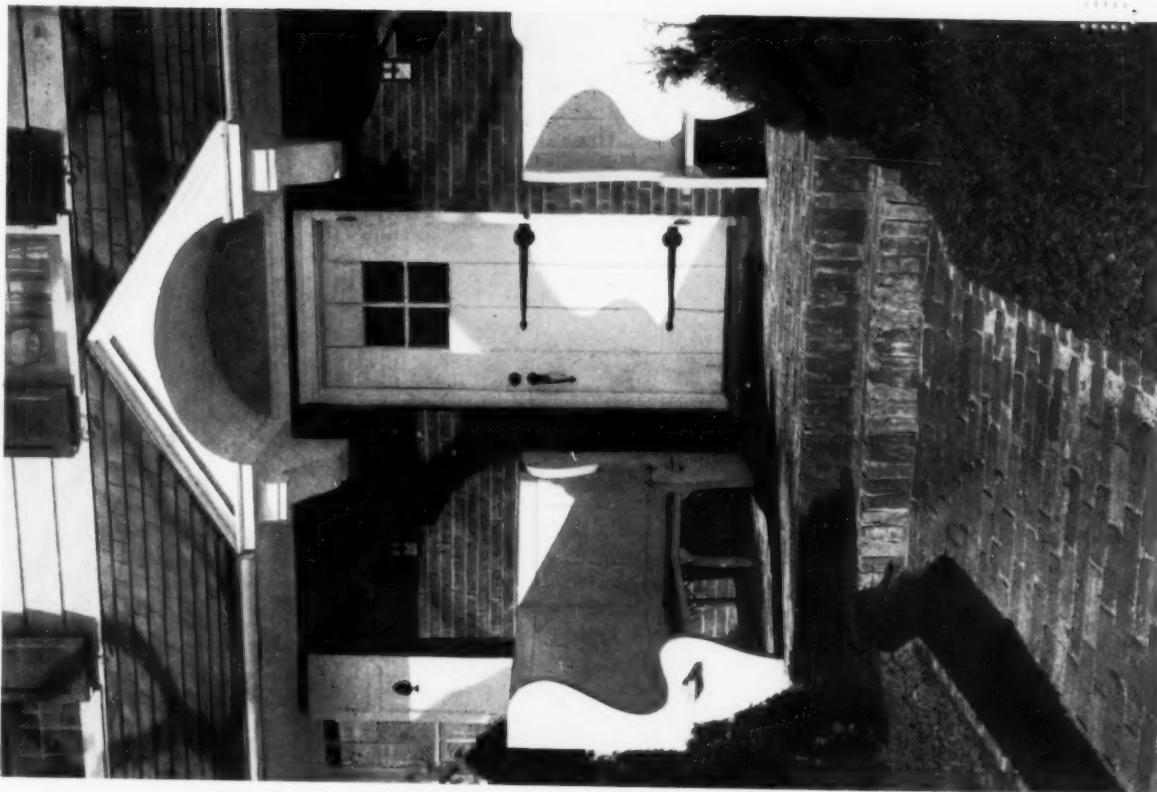
FIRST AND SECOND FLOOR PLANS AND GENERAL VIEW
HOUSE OF GORDON STEWART, ESQ., WHITESTONE LANDING, LONG ISLAND, N. Y.
FRANK J. FORSTER, ARCHITECT



MAY, 1921

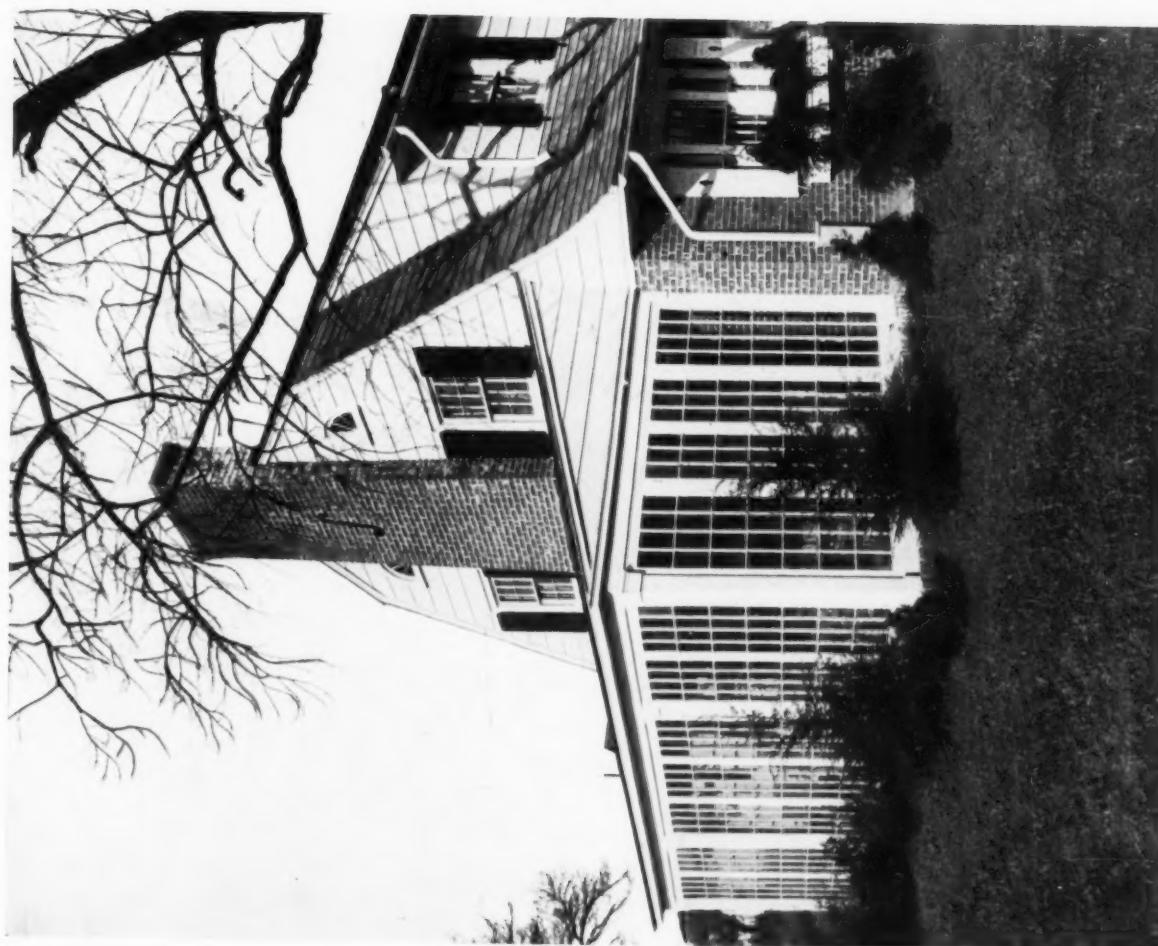
THE ARCHITECTURAL FORUM

PLATE 65



LIVING ROOM END AND ENTRANCE DETAIL
HOUSE OF GORDON STEWART, ESQ., WHITESTONE LANDING, LONG ISLAND, N. Y.

FRANK J. FORSTER, ARCHITECT



DECORATION & FURNITURE

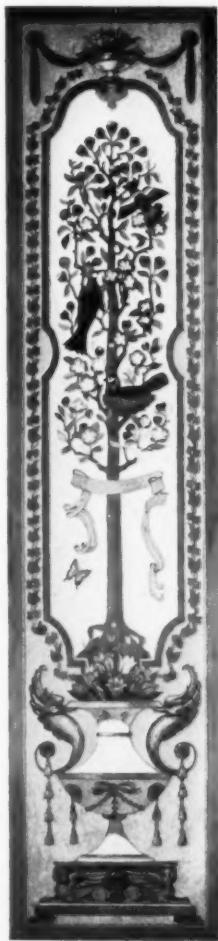
Jeanne Taylor, *Associate Editors*, Leland W. Lyon, R.A.

Mural Painting for Minor Buildings

WITH considerable advantage to themselves and to their clients, architects might well give more consideration to the claims of mural painting as a means of decoration. As applied to domestic buildings, and in fact to moderate cost work of many kinds, mural painting offers possibilities which are well worth encouragement. Because in the past mural decoration in America has been largely confined to use in public buildings, we have perhaps come to regard it as a form of decoration which is suitable only for structures of a monumental character. Many state capitols, court houses, city halls and some churches possess mural paintings, which attest the skill of our artists where

large wall spaces afford fitting opportunity for portraying historical events or allegorical episodes, in ways which accord well with their architectural surroundings, but this has resulted in a seemingly prevalent belief that mural painting is an art which, generally speaking, is above the heads of the people.

The minor villas, and even smaller houses, in Italy present many striking instances where mural painting, in some one of its manifold forms, constitutes almost the entire decoration. Many are the airy loggias or halls where such decoration is used, and where it still exists even after long periods of neglect, and fortunately rather more than a mere beginning has been made in the use



Breakfast Room Showing Panels "Spring, Summer, Autumn and Winter." Delano & Aldrich, Architects

in America of this highly architectural form of decoration, which may be adapted to the use of interiors of divers kinds and in keeping with their architectural character.

For breakfast rooms and elsewhere, when bright color notes predominate, mural painting in a high key may be in order. Or again, the mural decoration over the mantel may be the one necessary bright color spot in the room. Similarly, where the desired atmosphere is that of quiet dignity, mural paintings in subdued key and conservative design may be employed. Mural decoration offers to the architect countless interesting possibilities of expression in the decorating of interiors. It may be noted also that the mural decoration is as much a part of the interior architecture as mantels, fix-



Overmantel at Greenwich House, by Eugene Savage

tures and wall finish, and the architect can, by the employment of simple mural decoration, create an atmosphere which will encourage suitable furnishing.

It was recently suggested by Mr. Chester H. Aldrich, that young painters might well direct their study towards that kind of technique which makes the figure, landscape or marine composition so admirably suited to flat wall enrichment, instead of joining the already swollen ranks of the small canvas colorists. Perhaps equally interesting, however, might be

the suggestion to architects of giving commissions to competent mural painters, or of inducing their clients to do so. Such encouragement as is now being given to young sculptors would go far toward bringing mural painting into recognition.



Foyer of Greenwich House, New York. Delano & Aldrich, Architects
Mural Decorations by Arthur Crisp

Decorative Features in a Remodeled City House

DELANO & ALDRICH, ARCHITECTS

IN planning alterations for residential buildings, the ingenuity of the architect is often severely taxed to meet the exacting conditions presented by structures in which the principal lines and proportions have already been established. Of interest, therefore, are a few views of a remodeled city house, in which unusually good interiors have been developed under restricted conditions. It may be noted that this was a five-story residence, the architects' problem being to add another floor, and to develop a building containing three apartments of the duplex type.

The three illustrations which are included here indicate the character of the results which may be obtained by careful study on the part of the architect. A living room, shown as remodeled, has a deep cove at the ceiling with three penetrations on each wall, giving so little plain surface in the center as to appear like a groined barrel vault. This treatment in natural gray plaster, besides suggesting a lower story height, accomplished a stylistic background for a few choice examples of Italian furniture and pictures. Slightly darker

than the walls, and of a warm tone, is the antique stone mantel. A mellow light pervades the room by way of five large windows hung with orange Chinese silk in pleasing contrast to the somber taupe of the chenille rug and upholstery velvet. A bloom of age is present on the old walnut of tables and chairs, while a subdued glint of old gold or silver is barely apparent on portions of frames, candlesticks and other accessory furnishings, adding a sparkle in the rich glow.

The octagonal breakfast room shown on page 173 is a unit of this suite and gives an idea of the deviation from wall handling in other rooms which is, however, in perfect harmony. An illustration of the treatment of the hall is given because of its interesting arrangement. The method of concealing the radiators under the windows in this hall is particularly to be noted.

The demands of comfort met here can almost invariably be reconciled with the requirements of good taste, and a judicious arrangement will help to give an effect of dignity and space, even where little space actually exists.



Detail of Entrance Hall in Remodeled House, New York



TWO VIEWS OF LIVING ROOM IN REMODELED HOUSE, NEW YORK
DELANO & ALDRICH, ARCHITECTS

MAY, 1921

THE ARCHITECTURAL FORUM

PLATE 75



BREAKFAST ROOM IN HOUSE ON LONG ISLAND, N. Y.

TROWBRIDGE & ACKERMAN, ARCHITECTS

Grouping of late Italian Renaissance chairs and Spanish table about an early Chinese painting against gray plaster walls. Subdued coloring predominates except for the pair of bright faience jars and chair covering

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PLATE 76



DINING ROOM, HOUSE AT OYSTER BAY, LONG ISLAND, N. Y.

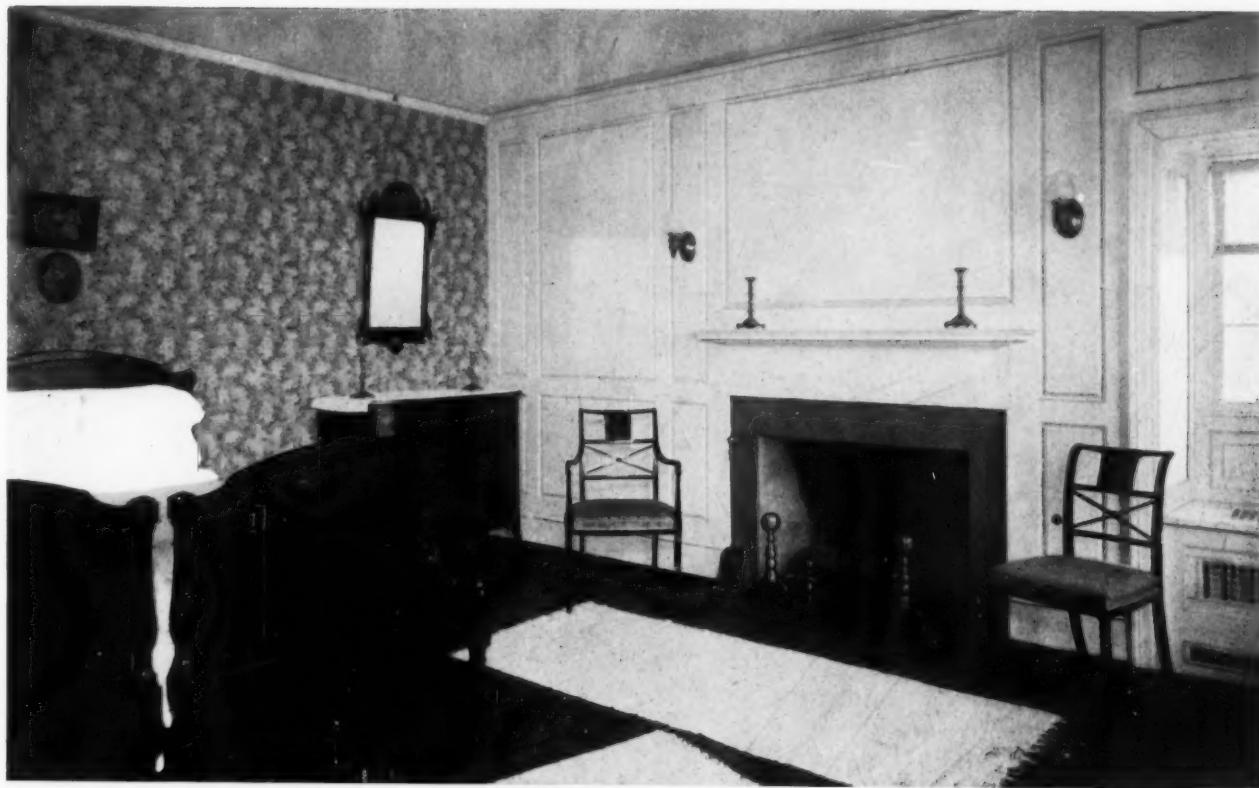
DELANO & ALDRICH, ARCHITECTS

Mural panels in the manner of early eighteenth century pastorals serve to relieve the appearance of austere formality of the chaste classicism

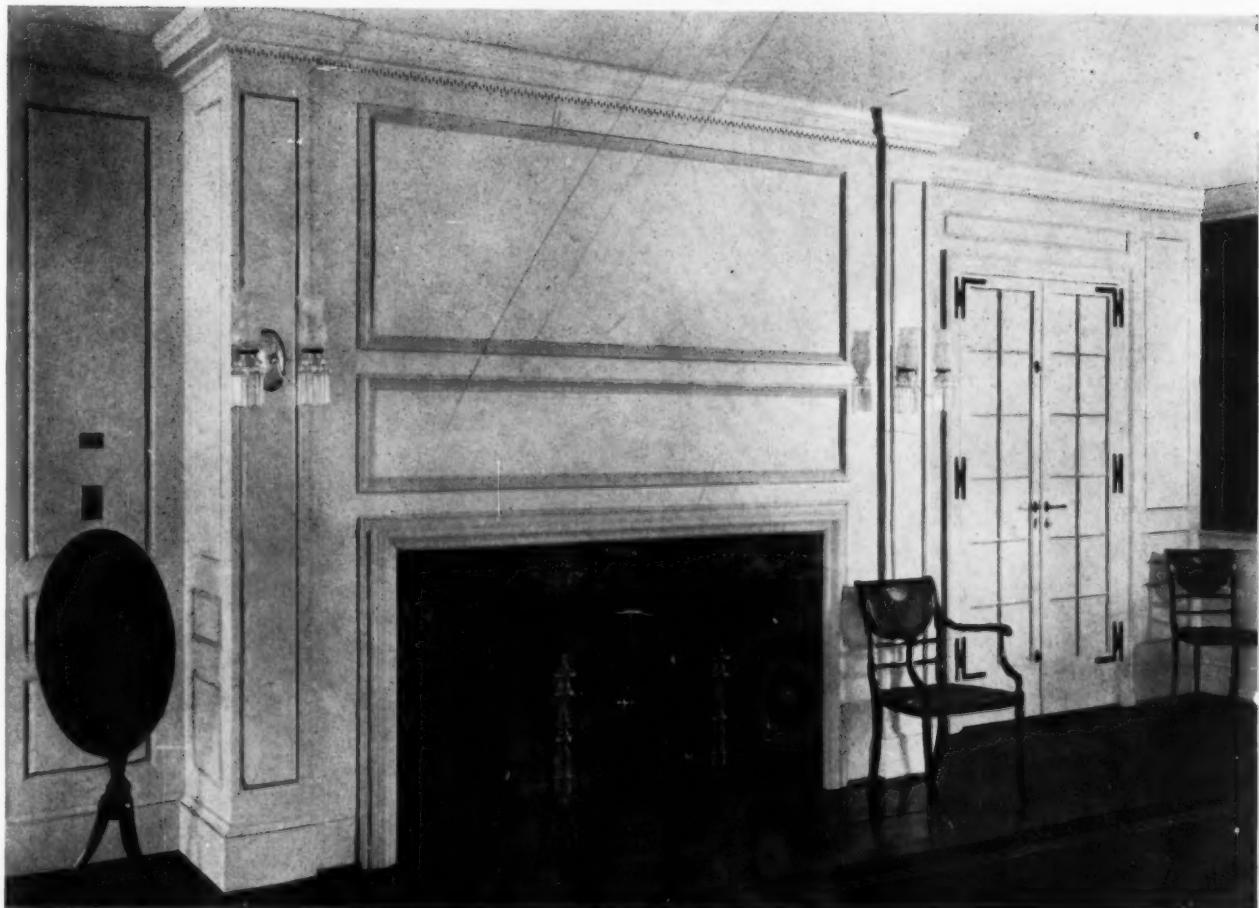
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THE ARCHITECTURAL FORUM

PLATE 77



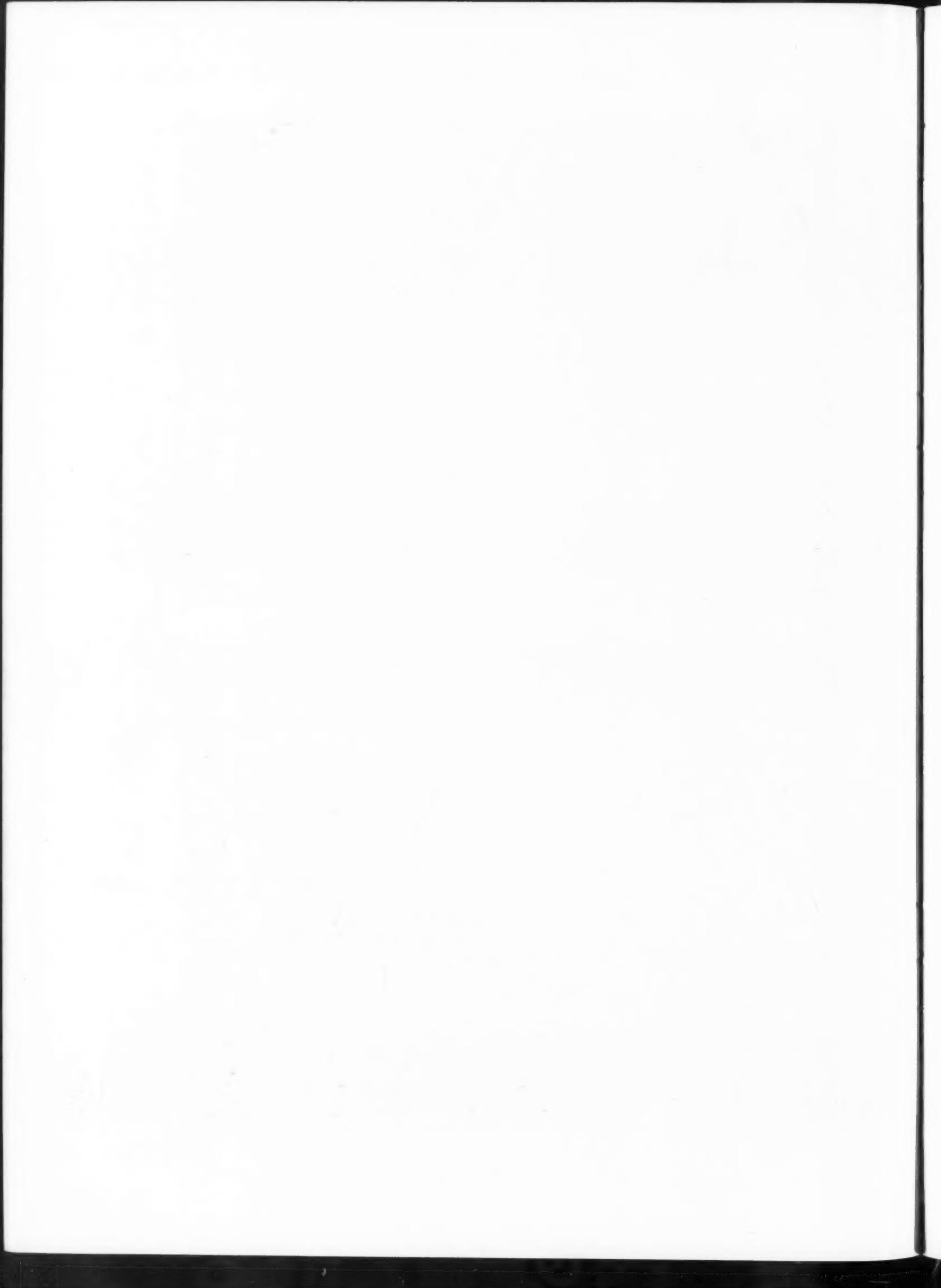
BEDROOM OVER DINING ROOM



LIVING ROOM FIREPLACE

HOUSE OF DR. LYNN FULKERSON, FIELDSTON, NEW YORK, N. Y.

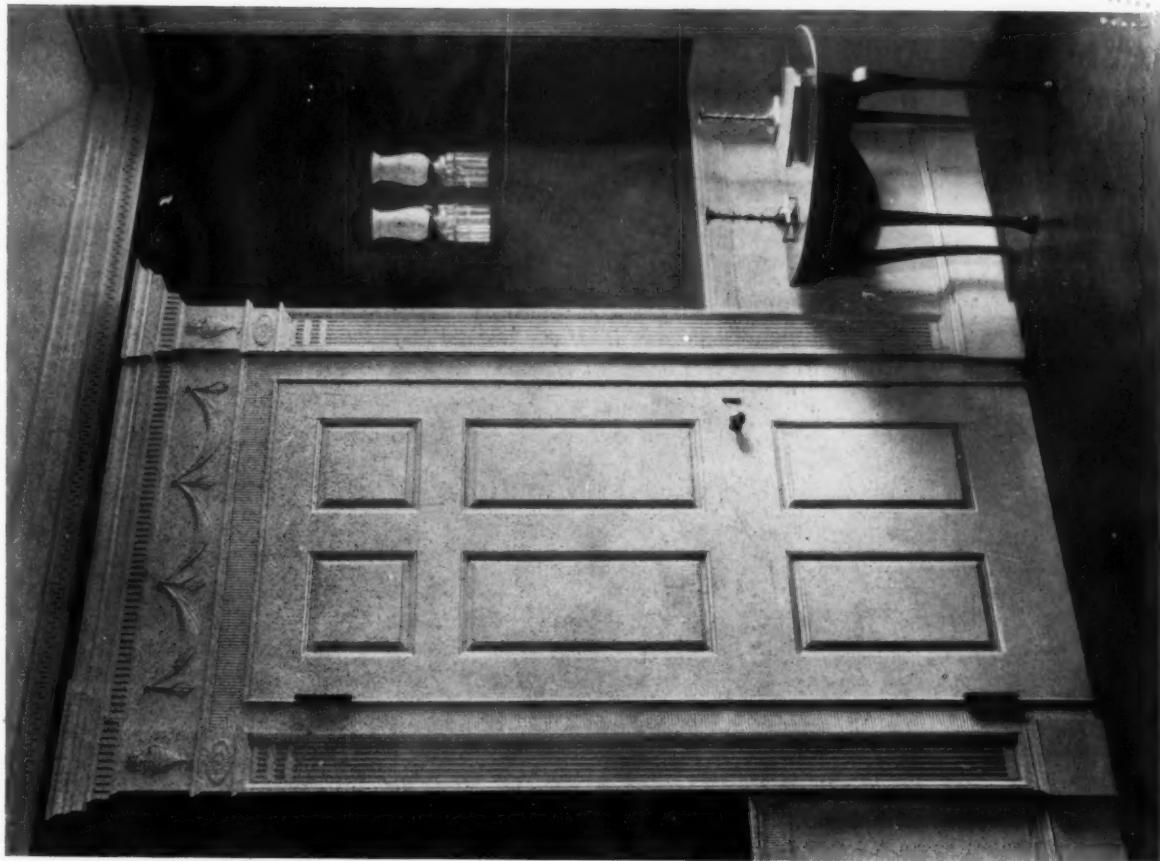
DWIGHT JAMES BAUM, ARCHITECT



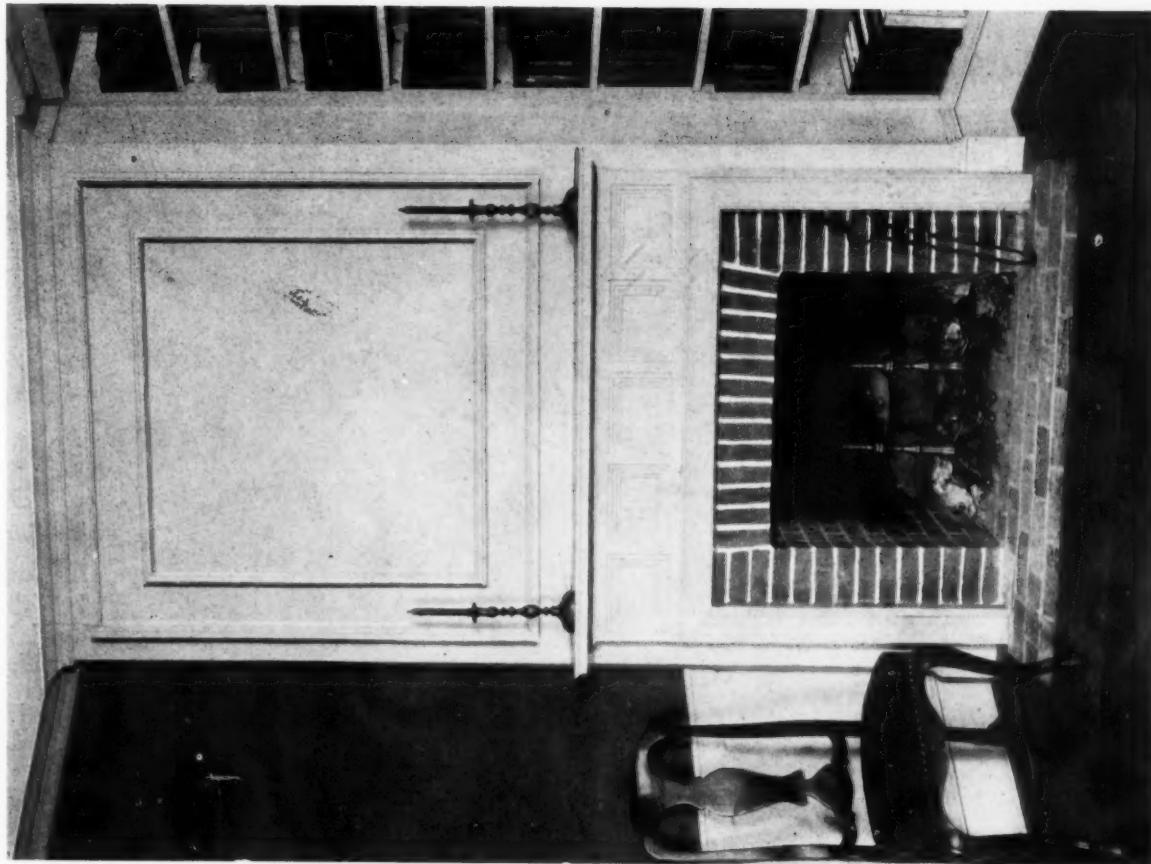
MAY, 1921

THE ARCHITECTURAL FORUM

PLATE 78



STUDY FIREPLACE AND LIVING ROOM DOOR
HOUSE OF DR. LYNN FULKERSON, FIELDSTON, NEW YORK, N. Y.
DWIGHT JAMES BAUM, ARCHITECT





The Central Manufacturing District, Chicago, Ill.

PART II. ARCHITECTURAL AND CONSTRUCTION FEATURES

By S. SCOTT JOY, ARCHITECT

THE new Central Manufacturing District, the development of which was briefly described in THE ARCHITECTURAL FORUM for April, covers an area approximately one mile square, in the center of which are the tower building and the central heating and power plant. The lower floors of the tower building are used for offices of the District architect, contractors and the construction accountant's staffs, while the upper portion is used for the housing of two 250,000-gallon steel sprinkler tanks which feed the sprinkler lines of all the buildings in this area, thereby eliminating unsightly unenclosed sprinkler tanks on individual buildings.

Adjoining this tower building is the central heating and power plant of the District which furnishes light, heat and power to the buildings, paid for by the owners or tenants of the buildings at a rate equal to that paid by consumers just outside the District. The owners however, and tenants as well, are not continually annoyed with the upkeep and necessary attention required for these plants, and when such an inconvenience as a shortage of coal, for example, occurs in other portions of Chicago, such a need has probably been foreseen by the District authorities and preventative measures taken so that operation of their businesses is not interfered with.

Buildings which are in the area known as the old District, which adjoins the new, are provided with their own individual heating and power plants, but wherever possible towers enclosing the sprinkler tanks are made an architectural feature of the building without entailing a great amount of expense. This supplies another means of avoiding monotony of design. The future plans for this District, and for others which are newly started, are to establish central heating and power plants, together with centrally located sprinkler tanks to supply all the buildings in each District. This decision was arrived at because of the efficient and profitable operation of the plant in the new District, which is to be a model for several others.

It is obvious to one who has visited the Central Manufacturing District that there must be some decided advantage in giving an architectural value to buildings of the warehouse and manufacturing types of which the District is chiefly composed. Several important factors contribute toward the maintenance of the architectural standard of all District buildings. In the first place, the trustees of the Central Manufacturing District, through their industrial agent, request that this standard not only be maintained but improved upon where such improvement is in keeping with practical and economical construction and design. The owners are all high class manufacturers and men who take pride in the exteriors as well as the interiors of their buildings. They are appreciative of the great undertaking which the Central Manufacturing District has begun, and they realize that unification and standardization of their buildings obtain for them larger and better structures than would be at all possible under conditions where each owner demands a building of a design which will suit his own individual taste, regardless of its suitability for its surroundings or of its relations to other buildings.

The architect maintains the architectural standard of these buildings in his designs, and is materially assisted by the high standard of building ideals of both the trustees and the owners. The scheme as originally conceived has been adhered to, and the employment of one architect has made possible unity of design without monotony. The trustees of the District leave the designing of all buildings to the architect, and it is mutually understood that all new buildings will harmonize with the style of architecture already established so that the whole development, when completed, will be distinctive and indicative of its purpose. The manufacturers, upon becoming members of the District, accept the general scheme as it has already been established, and impose limitations on the architect only as to the simplicity or elaborateness of the architectural treatment, which,

in the case of a manufacturer, may give to his business some value in the way of publicity. Due to the assistance of both the trustees and the manufacturers, as outlined here, the architect is given more or less of a free rein to keep his buildings typical of the established style of architecture.

If these warehouses and manufacturing plants were designed and built by individual architects and contractors, in the usual manner, their architectural treatment would show a greater increase of cost over the usual factory design than would be shown by the District buildings. The minimum of cost, the efficient method and type of construction, and the high standard of architectural treatment, all of which are constantly maintained, are secured in the District through a well developed system of operation. The trustees have confidence in the policy of employing one architect, one general contractor and, for most trades, one sub-contractor, to do all the work connected with the District. These organizations, in turn, can well afford to contract for this work on the basis of a much smaller percentage of profit, knowing that the volume of business will warrant such

reduction in percentage, when accepting the job.

As in every other architectural design, the handling of kinds and colors of materials plays almost as important a part as architectural proportions in the design of these buildings. The cream colored terra cotta, in contrast with the dark red "Standard District Brick," is used to accentuate the axes of pylons and piers. It is also used for pier caps, and for the carrying through of belt courses, cornices and copings. Polychrome terra cotta is often used for the decoration of the entrances to buildings. The concrete spandrels are frequently painted dark green, which gives a little color to the design and remedies the monotony of a motif too often repeated, besides introducing a subordinate vertical motif to break up the long horizontal lines. The same uses of terra cotta and belt courses occur in practically all buildings, even employing the same profiles of mouldings. Variety is obtained by the different proportions of the pylons and of the buildings themselves, in the breaking up of the coping lines, variety in the details of the ornamental features, and in the treatment of the entrances.

There are just two types of construction used—heavy mill, and reinforced concrete, both of which are adapted to the use of buildings for either factory or warehouse purposes. In the case of a factory, part of the building is often used for manufacturing, and part for storage of the raw materials or of the finished product. The designing of these buildings, for use in either of these two capacities, permits the proper adjustment and arrangement of the manufacturing space and also provides for future expansion, which important feature is never neglected. A scheme is developed for each client's entire property so that the unit buildings of each may be built as they are needed, and yet at the same time adhere to and advance the scheme originally conceived.

Mill constructed buildings are usually designed with bays 16 x 16 for laminated flooring for buildings having long, continuous runs of floor, thereby eliminating all the cutting possible. Joists and heavy matched and dressed flooring are used where greater spans and lighter loads are required. Both systems are estimated on for each building, and that is adopted which is the more economical and best suits the given conditions. Girders are always run the short length of a building to permit their erection and the complete framing of the whole floor before the walls are brought up.



Detail of Clock Tower Containing Offices

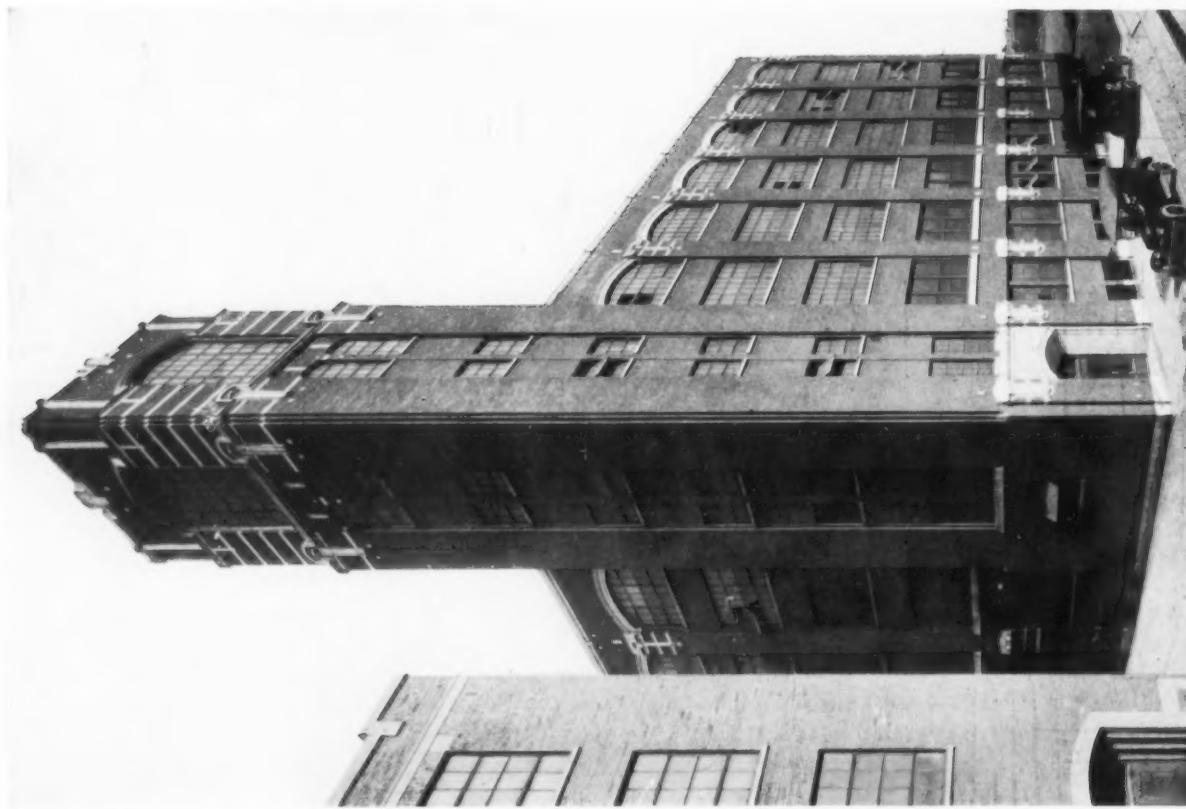
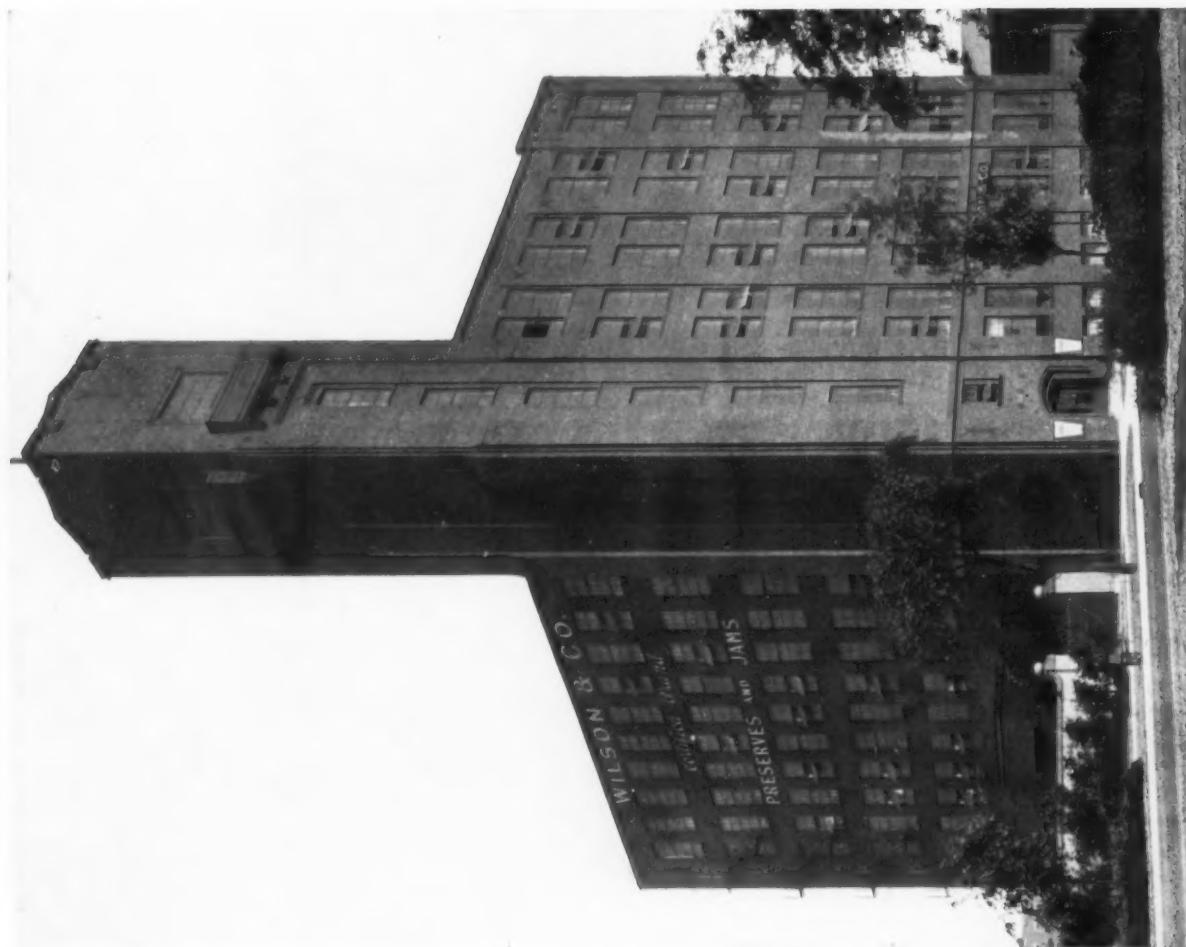


GENERAL VIEW



TOWER AND POWER HOUSE, CENTRAL MANUFACTURING DISTRICT, CHICAGO, ILL.

S. SCOTT JOY, ARCHITECT



BUILDINGS FOR NORTHERN JOBBING COMPANY AND WILSON & CO., CENTRAL MANUFACTURING DISTRICT, CHICAGO, ILL.
S. SCOTT JOY, ARCHITECT

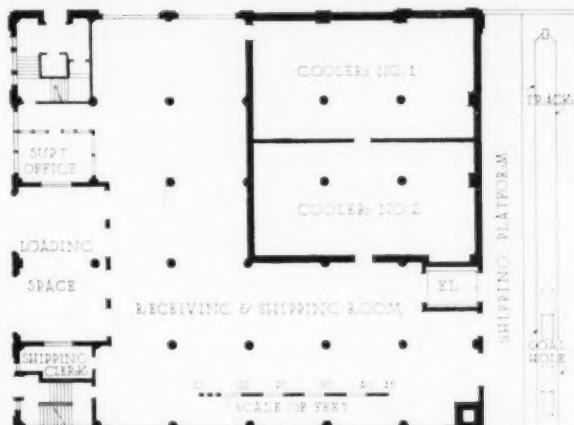
Reinforced concrete buildings are designed with bays as nearly square as possible, usually 20 feet each way, for flat slab construction. At the present time when the costs of construction of mill buildings and buildings of concrete are so nearly the same, the concrete construction is invariably used. It permits the light to penetrate farther into the interior of the building, instead of being cut off by deep girders and beams; it facilitates the running of pipes and shafting without hanging them so low that they cut off the head room; it gives the maximum of height for storage purposes and makes possible a decidedly lower rate of insurance, even in buildings that are unsprinklered.

It is only in exceptional cases that manufacturers require larger bays than those just mentioned, in which cases the live loads are decreased and the bays increased in the direction which allows the most practical and economical use of the lumber as applied to mill buildings. In concrete construction the bays are usually large enough in all cases, but larger bays are obtained where required by carrying the walls and sash on a cantilevered slab projecting 4 feet beyond the outside line of columns which gives 3 feet 8 inches of additional floor space in these outside bays.

Account is taken of the requirements of different kinds of manufacturing processes by variation in the dimensions of the bays as described here, and in the live loads to be imposed on the floors, which loads range from 150 to 250 pounds. The average load on most floors is 200 pounds. Elevators and provisions for the accommodation of machinery are all arranged to suit the requirements of the manufacturer. These special arrangements are such that the buildings can be very easily converted for the manufacture of products other than those for which they were originally



Building for Troco-Nut Butter Company



Main Floor Plan

designed, when necessary.

Speed of erection is one of the primary factors in the construction of any building, and is insisted upon in buildings erected by the Central Manufacturing District. It furnishes not only an inducement to the prospective manufacturer to begin operation in his new plant at the earliest possible moment, but it also saves for the District the loss of rentals, thereby again giving the District

use of its capital for immediate reinvestment.

Within the last year contracts have been closed on the afternoon of one day, and on the next morning the steam shovels would be excavating for the basement of the new building; on the second day correct excavation plans would be furnished the contractor, and on the fourth day the foundation plans would be in readiness. While the work is being gotten out by the contractor, according to the information he then has available, the architect completes the plans and these, together with the necessary specifications and details, are completed in approximately ten days' time. During this period also certain sub-contracts are placed by the architect for materials which take a considerable length of time for delivery, and the quantity of which can then be estimated and described. Also preliminary plans

are furnished the general contractor from which he can take off his quantities of brickwork, concrete work, steel, etc., which would not be apt to vary to any great extent from those quantities as shown on the final drawings.

While the excavation of the work is in progress the layout of the "job plant" is made and installed. This detail is given very careful attention, especially on concrete work, and is designed to handle the receiving, storing and distributing of materials for various portions of the work with the greatest facility and economy. All work is done with the idea of attaining the most practical speed coupled with the highest degree of efficiency. Progress charts are made out at the beginning of the work, and during the course of construction they are watched very carefully.

The general contractor and most of the subcontractors are selected and the contracts are awarded to them on a percentage basis with a fixed maximum cost, which, if exceeded, will be at the contractors' expense unless that excess is covered by extras which are approved by the architect and the owner.

One of the best examples of progress and co-operation on the part of all contractors employed on the work is shown in the record of the latest of the three units of a storage warehouse built for the Quartermaster Department of the United States Army in the new Central Manufacturing District. This "Unit C," typical of its two predecessors, is a six-story and basement building constructed of

reinforced concrete with brick walls, terra cotta trim and steel sash, and otherwise complete as would naturally be required in a building of this type. Work was begun on this building April 10, 1919 and the entire structure was completed on December 31 of the same year. During this time all progress ceased from July 17 to September 21, due to the builders' strike in Chicago. This unit contains approximately 630,000 square feet of floor space and was erected, complete, at a cost of \$1,700,000, or \$2.70 per square foot.

It has been found unnecessary to estimate the cost of these buildings by the cubic contents, as their story heights do not vary to any great extent. The square foot floor area basis is employed by the trustees of the District for estimating their rental values of buildings to be leased. This same system is used by the architect for estimating the cost of these buildings, which cost is based on the gross area. The average reinforced concrete warehouse is heated to a temperature of 50° in the warehouse portions and 70° in the office portions; it is sprinklered, has a moderate equipment of plumbing fixtures, electric lighting equivalent to 1/5 of a watt per square foot, one freight elevator to every 30,000 square feet and trackage for one freight car to every 20,000 square feet. At present prices this kind of building would cost approximately \$4 per square foot. This, of course, is due to the present high costs of labor and material, the pre-war price of this same type of building being \$1.25 per square foot.



Chicago Junction Warehouse Building

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

Steel Construction

PART II. COLUMNS AND BEAMS

By CHARLES L. SHEDD, C.E.

COLUMNS are uprights designed to resist compression. In Fig. 5 are shown several types of column. A is a single angle, to be used only for light loads and for short lengths. A column is designed to carry a certain load when the unsupported length of the column is known. By unsupported length is meant the distance below the beam which brings the load to the column to the next level, where it is properly braced sideways to resist buckling. When a column fails from being over-stressed, it bends in much the same way as a beam. When a column section is not symmetrical, it bends about its weaker axis.

The engineer refers to the stiffness of a column by the size of a property known as its radius of gyration. The reason that this is used is on ac-

formula which is most widely accepted is undoubtedly 16,000— $70 l/r$. If this were universally accepted it would be much better for everyone. This formula has been adopted by the American Railway Engineering Association, the City of Chicago and the City of New York. It is common practice to place a maximum for this stress below 16,000, usually about 14,000.* In this discussion, any figures given will be based on this formula, with a limit for the l/r of 120.

In the single-angle struts as shown, Fig. 5A, an angle with equal legs is generally used. A 3x3 angle should not be used when the unsupported length, l , is greater than 6 feet. The maximum load for such a column, when the thickness of the angle was $\frac{3}{8}$ inch, would be 15,000 pounds when the l was 6 feet. A table can be made up showing these limits:

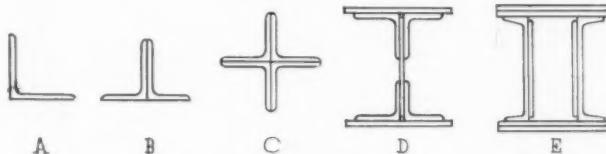


Fig. 5

count of its relation to the beam action when the column buckles or bends. He uses as a symbol for the radius of gyration a small r or the Greek letter rho. This is the measure of the stiffness of a particular column section. The measure of the stiffness of a particular column is the ratio of the unsupported length to the radius of gyration. This is spoken of as the l over r , or l/r . These two factors are in inches and it is good practice in design not to allow the l/r to exceed 120. For small loads, where the column serves a minor purpose, this is sometimes allowed to reach 150 or 160. When the l/r is small the allowable stress per square inch is large, and when the l/r is large the allowable stress per square inch is small.

A great number of tests have been made to determine a formula to give the amount of stress allowable per square inch for different values of l/r . Unfortunately, these tests have not given uniform results, and this has caused various engineers and compilers of building laws to adopt various formulae and considerable confusion has resulted. The

3" x 3" x $\frac{5}{16}$ "L	5' 11"	13,000#
3" x 3" x $\frac{3}{8}$ "L	5' 10"	15,000
3" x 3" x $\frac{7}{16}$ "L	5' 10"	18,000
3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x $\frac{5}{16}$ "L	6' 11"	16,000
3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x $\frac{3}{8}$ "L	6' 11"	19,000
3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x $\frac{7}{16}$ "L	6' 10"	21,000
4" x 4" x $\frac{5}{16}$ "L	7' 11"	18,000
4" x 4" x $\frac{3}{8}$ "L	7' 11"	21,000
4" x 4" x $\frac{7}{16}$ "L	7' 10"	24,000
4" x 4" x $\frac{1}{2}$ "L	7' 10"	28,000
5" x 5" x $\frac{3}{8}$ "L	9' 11"	27,000
5" x 5" x $\frac{7}{16}$ "L	9' 10"	31,000
5" x 5" x $\frac{1}{2}$ "L	9' 10"	35,000
5" x 5" x $\frac{9}{16}$ "L	9' 10"	39,000
6" x 6" x $\frac{3}{8}$ "L	11' 11"	33,000
6" x 6" x $\frac{7}{16}$ "L	11' 11"	38,000
6" x 6" x $\frac{1}{2}$ "L	11' 10"	43,000
6" x 6" x $\frac{9}{16}$ "L	11' 10"	48,000
6" x 6" x $\frac{5}{8}$ "L	11' 10"	53,000

In Fig. 5B the column is made up of two angles, back to back. When the legs are not equal, the long legs are placed together to make the two radii of gyration as near equal as possible, and thus effect economy. To make them more nearly equal, the angles are frequently separated a little by washers through which the rivets pass, fastening the two angles together. The angles should be riveted securely together so that neither can buckle between the rivets alone, and so that the buckling

*A. R. E. 13,500#; Chicago 14,000#; New York 16,000#.

tendency of the column as a whole cannot overstress the rivets. It is common practice to space these rivets from 1 foot to $1\frac{1}{2}$ feet apart. A small table will be made up for this type of column, similar to that for the single-angle type. These tables are not intended to provide data sufficient to design columns, but merely to give the architect a reasonable idea how much space will be required by the engineer for his material. These two types of small columns are frequently spoken of as struts, to distinguish them from more important columns.

Section L ^o 3 ⁸ " back to back	Length to make 1/r = 120	Allowable load when 1/r = 120
1-3" x 2 $\frac{1}{2}$ " x 5 $\frac{1}{16}$ " L ^o 3 ⁸ "	9' 5" 9' 4"	24,000# 28,000
1-3" x 3" 3 ⁸ " 7 ¹⁶ "	9' 2" 9' 1" 9' 1"	28,000 32,000 37,000
1-4" x 3" 3 ⁸ " 7 ¹⁶ " 1 ¹ ₂ "	12' 9" 12' 8" 12' 6" 12' 6"	31,000 36,000 42,000 47,000
1-5" x 3" 3 ⁸ " 7 ¹⁶ " 1 ¹ ₂ " 9 ¹⁵ "	12' 2" 12' 3" 12' 4" 12' 6" 12' 7"	37,000 45,000 52,000 54,000 62,000
1-5" x 3 $\frac{1}{2}$ " x 5 $\frac{1}{16}$ " L ^o 3 ⁸ " 7 ¹⁶ " 1 ¹ ₂ " 9 ¹⁵ " 11 ¹⁵ " 3 ⁴ "	14' 6" 14' 7" 14' 8" 14' 10" 15' 0" 15' 1" 15' 2" 15' 3"	38,000 46,000 54,000 61,000 68,000 74,000 82,000 89,000
1-6" x 4" 3 ⁸ " 7 ¹⁶ " 1 ¹ ₂ " 9 ¹⁵ " 5 ¹⁵ " 11 ¹⁵ " 3 ⁴ "	16' 2" 16' 3" 16' 6" 16' 7" 16' 8" 16' 9" 17' 0"	55,000 64,000 73,000 81,000 88,000 98,000 105,000

Fig. 5C illustrates what is commonly called the "star column," composed of four angles, back to back or separated by a small distance similar to those in Fig. 5B. This is a very uneconomical type of column but is often used in theaters under balconies as it requires but little fireproofing and therefore occupies less space and can readily be finished round. This illustrates what makes a column economical. With a given area it is evident that the greater the radius of gyration the greater the allowable load. To get this condition ideal it is therefore necessary that the material shall be as far away from the center of the section as possible and uniformly distributed. A circular hollow column, such as is commonly made from cast iron, obviously fulfills this condition in an ideal way. In the steel sections shown in Fig. 5, that for type E comes as near to filling this condition as is possible.

Type D is perhaps the most common type of column in use at present. It is called the "plate and angle" column, and is made up out of the web plate in the middle with four angles and two or more

cover plates. Of course the cover plates may be omitted entirely. In the April number of THE FORUM mention was made of the Bethlehem H column which is similar to this, and a comparison was made between the two. When unequal legs are used in the angles, the short legs are placed against the webs for economy, but these must not be too short to provide for good riveting, especially when beam connections must be made to the column on the hollow side. A 3-inch leg against the web is a minimum, and then only with thin angles, and a $3\frac{1}{2}$ -inch leg is better, especially if a beam connection must be made on it. Care must also be taken not to put too many cover plates on the flanges as rivets must not be too long to drive well. It is best to limit the grip of the rivet to 3 inches when the usual $\frac{3}{4}$ -inch rivet is used, not forgetting to include the connection angles for the beam connections. By grip is meant the total thickness of the metal through which the rivet passes.

With 8-inch webs and 10-inch cover plates the unsupported length may reach 21 feet at which point the maximum allowable load would be about 435,000#. By using 12-inch cover plates the length may be increased to 23'8" and the load to about 475,000#. With a 10-inch web and 12-inch cover plates the length may reach 26'4", and the load about 500,000#. With 12-inch webs and 14-inch cover plates the length may reach 32 feet and the load 640,000#. With web plates and covers both 14 inches, a length of 36 feet may be reached and about 660,000# as a load. When the length is only 24% of the lengths given here, the load may be increased about 84% and intermediate conditions approximated from these two extremes by interpolation.

Fig. 5E shows the "plate and channel" column. This type was much more common 15 years ago than it is now. For long lengths, and where the stress is not limited to 14,000# per square inch, it is considerably more economical than the plate and angle column. The inside plates on the backs of the channels are not used except for very heavy loading, after the cover plates and channels have been made as heavy as practicable. With 8-inch channels and 12-inch cover plates, a length of 36 feet may be reached. With 10-inch channels and 14-inch covers, 43 feet; with 12-inch channels and 16-inch plates, 48 feet; and with 15-inch channels and 18-inch covers, 55 feet. For still heavier columns a plate and two angles may be substituted for a channel, or an I beam may be placed between the channels, or a plate and four angles may be substituted for the I beam. These designs might be multiplied indefinitely, but those mentioned are typical. In designing peculiar sections, these two things must be borne in mind: to have it possible to drive the rivets required, and to drive good rivets without unusual or unnecessary expense.

In connecting beams to columns two methods are frequently used. One is to have the connection

angles on the web of the beam, and to rivet them in the field to the column with no more than a small angle under the beam already riveted to the column for erection purposes. The other is to have a seat with necessary stiffeners already riveted to the column with a small top angle. (See Fig. 6.) The advantage of the latter plan is to bring the field riveting down to a minimum. This means speed without sacrifice of anything serious in the design. It means slightly longer rivets through the stiffener angles, which are the small upright angles under the seat. It is not good design to have too many rivets in a row in these stiffener angles, as the top rivets are sure to get the greater part of the load. Two or more such angles may be used when the load requires it. If the stiffener angle projects far enough to interfere with the architecture, a plate may be used but it is not as satisfactory as the bearing of it against the seat angle cannot be made as certain as if a stiffener angle be used. When there is an eccentric loading to be resisted by the beam connection, the horizontal and vertical legs of both top and bottom angles may be made 6 inches to allow more rivets to be used.

When a beam frames into a column off center it is said to be eccentric, and it has a tendency to cause a bending in the column unless there is something to resist it, such as another beam which can pull in the opposite direction and which is strong enough to do so sufficiently, and the connection of

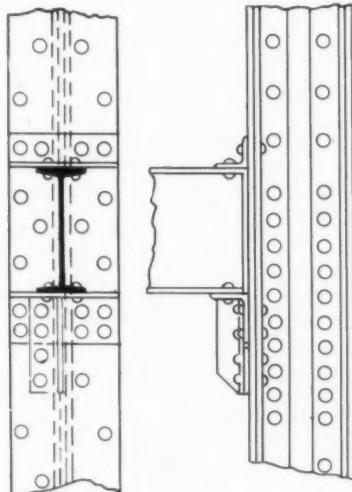


Fig. 6

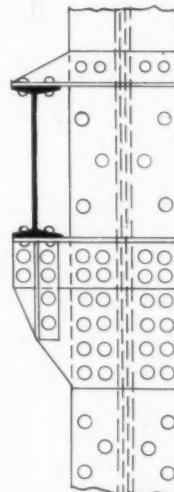


Fig. 7

which to the column is sufficiently strong to resist the strain safely. When a beam frames into a column eccentrically it needs special brackets to transfer the load to the column without overstressing the rivets. These rivets, in addition to transferring the direct load, are resisting a twisting known technically as a moment. Fig. 7 shows a typical connection for such a beam when it frames in on the hollow side of the column. When it frames in on the hollow side and is eccentric, it might have

a connection similar to that shown in Fig. 8. If this beam had been nearer to the column so as to almost touch it, it might rest on a seat similar to that shown in Fig. 6.

Columns in office buildings are commonly made in two-story lengths, that is from 25 to 30 feet long, and sometimes a little longer. In buildings with large story heights, such as churches, each case has to be treated separately and some columns have to be shipped with very long lengths. These two-story lengths rest on top of one another and are

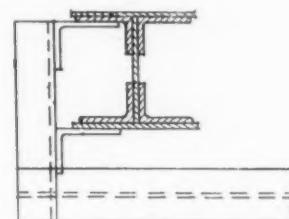


Fig. 8

spliced together. They should be designed so that the metal of the column above will rest entirely on metal below, or very nearly so. This bearing area should not in any case be stressed up to over 16,000# per square inch. The columns decrease in size in the upper stories of a building, and in some cases it is feasible to have an extra cover plate on the lower story of a two-story column. The splice is usually effected in a plate and angle column by adding short plates just outside the cover plates of the column below and have them extend up beside the column above. Filler plates are usually necessary between these plates and the column above. The plates lap over each length about 1'6" making them about 3'0" long, and are attached in the shop to the column below. The rivets to the column above are driven in the field.

When it is difficult to provide bearing properly between one length of column and that below, a small difference may be taken up by a horizontal plate called a "cap plate" being placed between the two lengths. This is also attached to the column below, it being done by two small angles like seat angles on the hollow side of the column. In some buildings it will be found that there is an odd number of stories so that one length of column must be short and of one story only. It is usually best to have this short length at the top, as the first story of a building is usually the larger, and the basement considerably smaller. This makes it possible for the lower length of column, which is the heaviest in the building, to have very little waste material in either the basement or first story. The bases for columns will be taken up in a future article.

In Fig. 9 are shown some ways of framing a cantilever in steel. This condition frequently occurs beside a stair well. In a wooden building an X shaped frame is frequently used. This would be bad in steel, due to the connections from one beam

to another being at or near an angle of 45° . Under these conditions it is difficult or impossible to drive the rivets properly, and it causes trouble in the shop and during erection. It is therefore common practice to frame the cantilever into the beam, supporting it in the manner shown in Fig. 9. A beam on the opposite side of the supporting beam from the cantilever extends back to a support and anchors it down. If the beams are the same size, the first method is used. The plate on top takes tension and the lower plate takes compression. To prevent this plate from buckling, it must be riveted

steel. When a beam frames into a double girder similar to this, the flanges of girder beams are usually so close together that rivets cannot be driven with a head on the web between the two beams. It is then necessary either to use bolts passing through both beams, or seat angles, or one-sided connections. The author objects to the latter type wherever it is possible to avoid it.

In outside beams, carrying walls, it is usually best to have them placed flush on bottom with the interior beams. This simplifies the column connection. Loose lintels may be placed below them

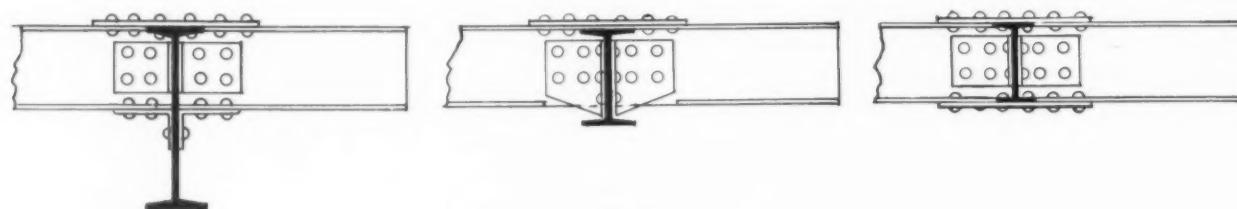


Fig. 9

to the lower flange of the supporting beam. As this is the tension flange of the supporting beam, it of course weakens it and due allowance must be made for these holes. If the supporting beam is sufficiently deep the third method may be used, the compression in the lower flange of the cantilever passing through the seat angles to the beam on the other side.

As the cantilever beam will not bear against the web of the supporting beam accurately, and usually not at all, this compression must pass through the flange rivets into the horizontal leg of the seat angle, and similarly through the seat angle and rivets on the other side to the anchor beam. Therefore enough rivets must be provided to transfer this stress. If the supporting beam is not sufficiently deep to give room for the seat angle the second method must be used, necessitating the cutting off of the flanges of the cantilever and anchor beam to allow deep angles to be provided to transfer the compression. Here, of course, the cantilever and anchor beams are weakened in bending where they are most strained, and allowance must be made therefor.

It is best that beams frame into each other as nearly at right angles as possible. If the bevel is not more than 3 inches to the foot, it makes practically no difference. Up to 45° it can be done only with more or less awkwardness, and beyond that it is very unsatisfactory. The smaller beams carrying the floor directly, frame into larger beams known as the girder beams. It is sometimes, for architectural reasons, more practical to use two shallow beams than one deep beam. This effects a greater head room but sacrifices economy in the

over the windows and doors. Exterior columns are best placed with the webs parallel to the wall. This is because the beams are usually eccentric and the connections to the columns can be made better. (Compare Figs. 7 and 8.) This of course is not the strongest to resist eccentric loading, but it is preferred by the author as an interior beam usually frames into the outside beams at or near the column. These exterior wall-carrying beams are known as spandrels.

Beams do not necessarily frame into larger beams, as the size depends on span and distribution of loading. It is common practice to frame a beam into one the next size smaller, and a 10-inch beam or smaller may frame into one as small as 7 inches. The 7-inch beam does not conveniently frame into a 6-inch beam, however. It is often good design not to frame a beam of less than 8 inches into a column when seat angles are used. This is because a smaller beam cannot take a $\frac{3}{4}$ -inch rivet in its flange, resulting in two sizes of rivets on the job and causing some confusion. An 8-inch beam also makes a better brace for a column than one smaller.

It is often possible to frame the web of a beam into a double-angle strut by passing it between the angles after cutting off the flanges. Others prefer to pass a plate between the angles and rivet it to the web of the beam. On the opposite side of a double-angle strut a shelf angle may be used. If the web of the beam is parallel to the outstanding legs of a double-angle strut, it is usually best to run a plate by the strut riveting it to the outstanding legs and to the web of the beam. At least two rivets should be used in a connection, or it would be possible for it to rotate about the single rivet.

Terra Cotta Roofing Tile

PART III

By ALFRED LO CASCIO

WE have come to a period when irregular laying of tile roofing, to help give texture to a roof as a whole, is being given particular consideration. Texture is largely secured through the use of hand treatment, applied by some manufacturers to the surfaces of the tile by thumb pressing, hand combing or some other such process involving hand work which, added to the excellent color schemes possible, gives tone and character that are most pleasing. With all this, however, it is essential for the tile maker to understand what is required, without attempting too much, which might easily result in mechanical irregularity and be a failure.

It is surprising to note the difference between the appearance of a roof covered with tile laid in the customary manner and that of another roof of exactly the same design and covered with the same tiles laid irregularly, and by irregularly is not meant carried to an extreme. The mission tiles, and even the Spanish and shingle patterns, can be laid with varied exposures to the weather, and use may be made not only of tile of the same size, for if a greater variation be required, manufacturers

can produce tile of different sizes, which, mingled judiciously, will give the desired effect.

The purpose of all this is to secure a natural tile roof such as those seen in the old world countries, laid hundreds of years ago, crudely rustic and weathered in the course of time, before manufacturers or modern processes entered into the industry. Of course it would not be possible or practical, in view of climatic conditions in this country, to make or use tile hand made in its entirety. Tiles made wholly by hand are, therefore, a thing of the past insofar as modern manufacture is concerned, but it is quite possible to secure all the picturesqueness of the old roofs by using tiles of present-day manufacture, which means that all the desirable results which might follow the use of old tile may be had without any sacrifice of the practical qualities which are expected of a modern roof; all that is required is that the roofing tiles be laid in a manner somewhat different from the way in which tiles are usually applied.

There are small huts or ancient structures in certain European countries, and in the mountains of Porto Rico, where tiles can be found that were



Details of Tile Roofs on Two Houses in California

That at the right has eaves closures, while the other shows cemented hips

made by the Spanish monks hundreds of years ago, still in very good condition, so that once in a great while such tiles are secured and used, by purchasing an entire structure and bringing the tiles to America. These imported tile, however, are of such a nature that it has been found impossible, with severe changes of weather, such as are usual in some latitudes, to depend greatly upon them, and they are used chiefly on small areas such as mansards, projections here and there, wall coverings, belfries, or over arches for garden work—just touches to give a picturesque setting. These handmade tile are varied in colors, such as buff, pink, tan, green, gray, brown and black, and they must be embedded in cement as they are without nail holes. The tiles themselves are so varied that some are warped, while others have the edges turned, and the curves of others are so flat that several tiles are required, one over the other, in order to give the proper effect.

The protection of this sort of a roof for the inside of the building is entirely another factor; the under roofing must be thoroughly waterproofed and made tight before the tile are laid, which is a costly item, so that a roof of these tiles should not be attempted



Example of Tile Treatment for Small Surface
George Washington Smith, Architect

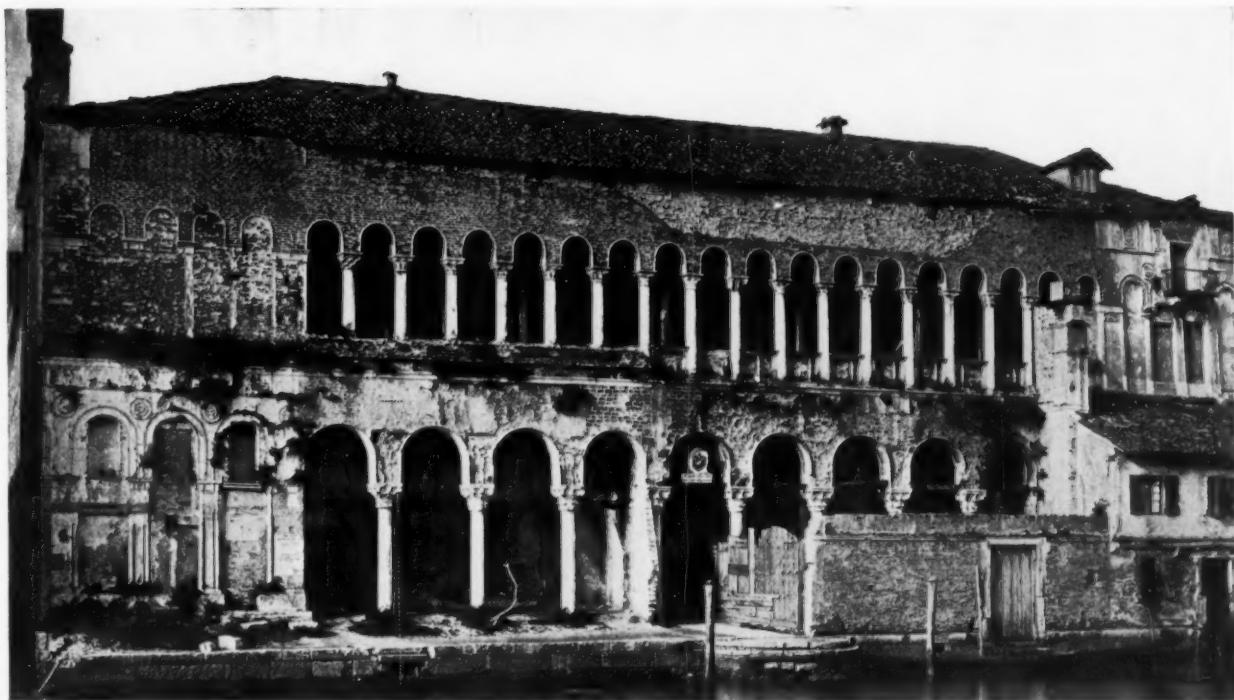
if low cost is to be considered. There are a very few instances where tiles have been imported and placed on the roofs of summer houses or small buildings of other kinds to add to the attractiveness of certain large estates on our Atlantic coast, but while they are enchanting to view and beautiful in color tone, these roof surfaces have to be covered during the winter with heavy canvas, and even with this care the surfaces are in some

instances beginning to discolor and scale, simply because the tile are not made for this climate and, in time, nothing will be left but the plain, drab under roofing, which will have to be recovered with some other material. If the owner, or architect, wishes to secure a similar effect, without continued importation of tiles unsuited for this climate, by co-operation with the manufacturer as to the requirements, he can get a roof that will rival the interest of the old world examples and, what is equally important, constitute a covering that will outlast the rest of the building.

The tiles of present-day manufacture are produced to withstand climatic conditions and in textures, shapes, sizes and colors to give an artistic and practical roof covering which can be laid with



House at Santa Barbara, California, with Roof in Character of Early Spanish Missions
George Washington Smith, Architect



Venetian Palazzo Showing Roof in Scale and Texture of Early Italian Work

such irregularity as to give the effect of the original handmade tiles, put in place centuries ago. To gain this result we must also eliminate stock ridges, hips and terminals, and in their places use the half-round, straight barrel, or tapered mission tile for all hips and ridges and their connections, mitering or laying them in crude fashion with Portland cement. There are sections on such roofs where it is absolutely necessary to use elastic cement instead of Portland cement, as the roof must be leak-proof, and if Portland cement is used against the hip board, under the hip roll, in the course of time with the least vibration of the building, the cement which has hardened will crack and fall out, while elastic cement will expand and contract with the building. To use a touch of Portland cement here and there, along the eaves courses, for example, in place of manufactured eaves closures, adds to the quaintness of the effect. Examples of old world methods of tile roofing, seen more often throughout California, are chiefly the result of an irregular method of applying the tiles to the roof; there are a few roofs in other parts of the country laid similarly, but there should be more and more of them.

Some tile have a natural rustic texture on account of the particular kinds of clays used, which adds wonderfully to the results obtained with the irregular laying, but in placing such a roof, consideration must be given to trying climatic conditions. If the tile is of vitreous quality and the texture and color are the result of natural burning in the kiln, or even if the color constitutes a slip covering on the surface, and the body on which the color is dipped or sprayed be hard burned, it is a safeguard against serious damage caused by climatic

changes. In many parts of America we have snatches of summer and winter weather within 24 hours, and it is necessary that no misgiving be felt about the wearing qualities of a roof. There are, of course, sections of the country where tile need not be of this quality, as, if they are of good, hard clay they will withstand more severe weather than is experienced even in New England, for example.

These irregular methods of applying roofing tiles to give a desired effect are as foreign to the inexperienced tile roofer as building a staircase. One might suppose that the irregular laying would be better accomplished by an inexperienced roofer, who has not been schooled and drilled into mechanical perfection, but this has been disproved by past experience. To gain a natural, artistic roof requires the services of an experienced tile roofer because as he works, or rather as he plays, he still keeps in mind the element of risk in regard to weather tightness and remembers that leaks must not mar the integrity of the roof laid in natural beauty of irregularity with hard, mechanical lines forgotten.

It is, therefore, plainly to be seen that such roofs as we so often hear talked of can be secured right in this country and can be constructed in much the usual manner, with the protection assured by the use of practical workmanship, and it only means, as explained in articles previously written on this subject, the full co-operation of all who are interested. Particular pride should be felt that these tiles can be obtained without attempting to import them, and that one can have, with tiles of American manufacture, both the protection of a practical and water-tight roof when it storms, and the satisfaction of possessing an artistic, fascinating roof covering when the sun shines.

EDITORIAL COMMENT

WHAT CAN ARCHITECTS DO TO STIMULATE BUILDING?

CURRENT building reports, encouraging as they are, represent only work for which permits have been secured. The figures for work actually under construction would undoubtedly show a considerable shrinkage. This is apparent in talking with a number of architects; there is an undeniable interest in building, but there are still many obstacles in the way that prevent owners from signing contracts. The margin between what might be termed the "asking price" and the level on which contracts can be signed, is not particularly great—ranging from 10 to 20 per cent. This fact prompts the question, "What can architects do to stimulate building?"

That architects are able to stimulate building is proved by a number of offices, known to us, that are as busy right now as at any time in their careers. They are offices in which well organized business departments are working, which enable them to follow the trend of construction costs and to present evidence to owners that they have been able to eliminate practically all costs which are not represented by honest labor and fair material prices. When the cost of a building is cut down to these basic factors, with extravagant overhead, different kinds of "insurance," and wasteful organization on the work eliminated, the result is likely to be a figure on which an owner can proceed.

One architect, in talking recently with a member of our staff, made the statement that of the work that came to his office this year, none had failed to go ahead. He has no mystic power over his clients; he has no peculiar business secrets, but he follows the simple, businesslike practice of investigating contracting and material fields sufficiently to find where the excess cost lies, and then eliminates it. To be more specific, he prepares his plans in the usual way, basing them on current data obtained by his office with reference to costs. Surveys of materials are prepared and the plans submitted for bids to contractors, but instead of confining the asking for bids to some half-dozen or more contractors, 30 or more are asked to bid. Before asking for figures, assurance is had that the contractor actually *wants* work, and that he has a reliable organization that can execute the work efficiently.

The contractors are asked to submit their bids in detail, giving sub-contract figures, principal material quotations, and their profits. The architect reserves the right to, and does, secure independent sub-contract and material quotations. In this list of 30 or more sets of contract figures there is, of course, a wide range, but at the bottom of the

list there are always from four to six figures within very small amounts of one another. These represent the bids of contractors who make real efforts to buy materials and operate economically.

The results of the architect's own investigation of material prices and sub-contract quotations are checked against the general bids. If the architect has been able to secure lower quotations, they are substituted for the figures of the contractor finally decided upon. The contract is made with the contractor's known profit as a fee, and with the total estimated cost of the building as the guaranteed contract price, the work being carried on in practically all respects as under a lump-sum contract. Additional provisions are made, however, that any savings in the cost of materials, under the prices on which the contract is based, revert to the owner, and any savings as a result of increased efficiency are divided equally between owner and contractor.

This method of arriving at a contract price undoubtedly places an extra burden on the architect; it is effective, however, in eliminating excess cost, and in accomplishing that the architect has made a contribution to the welfare of the building industry that will prove a lasting asset. With the evidence of the architect's economy properly laid before the client, it is comparatively easy for him to see that he is getting as much value for his expenditure as is possible under prevailing conditions. The provision giving him the benefit of any reductions in material costs removes objections to any possible penalty for going ahead, and the wheels of industry are started, which is most essential.

Plans similar to this are in use in other offices, sometimes with the elimination of the general contractor,—the purchasing of materials and the assembling of sub-contracts being done by a construction division of the architects' organizations, or as in Chicago, by an independent supervisory agent, working with the architect and known as a "construction manager." It is usual, under either method, to make a charge of four per cent to the owner which is paid to the construction manager or to the architect, according to the actual method of handling the detailed work involved. There are advantages, however, in the service of the general contractor which cannot immediately be given by the architect, and on the whole some such method as outlined will prove most satisfactory.

Numbers of other suggestions might be offered to show that progressive architects are extremely important factors in the revival of building. The few given will suffice, however, to point the way and it is safe to say that architects who use their resources thus will profit in gaining reputations for accomplishment under difficult conditions.